

Evansville Area Tornado



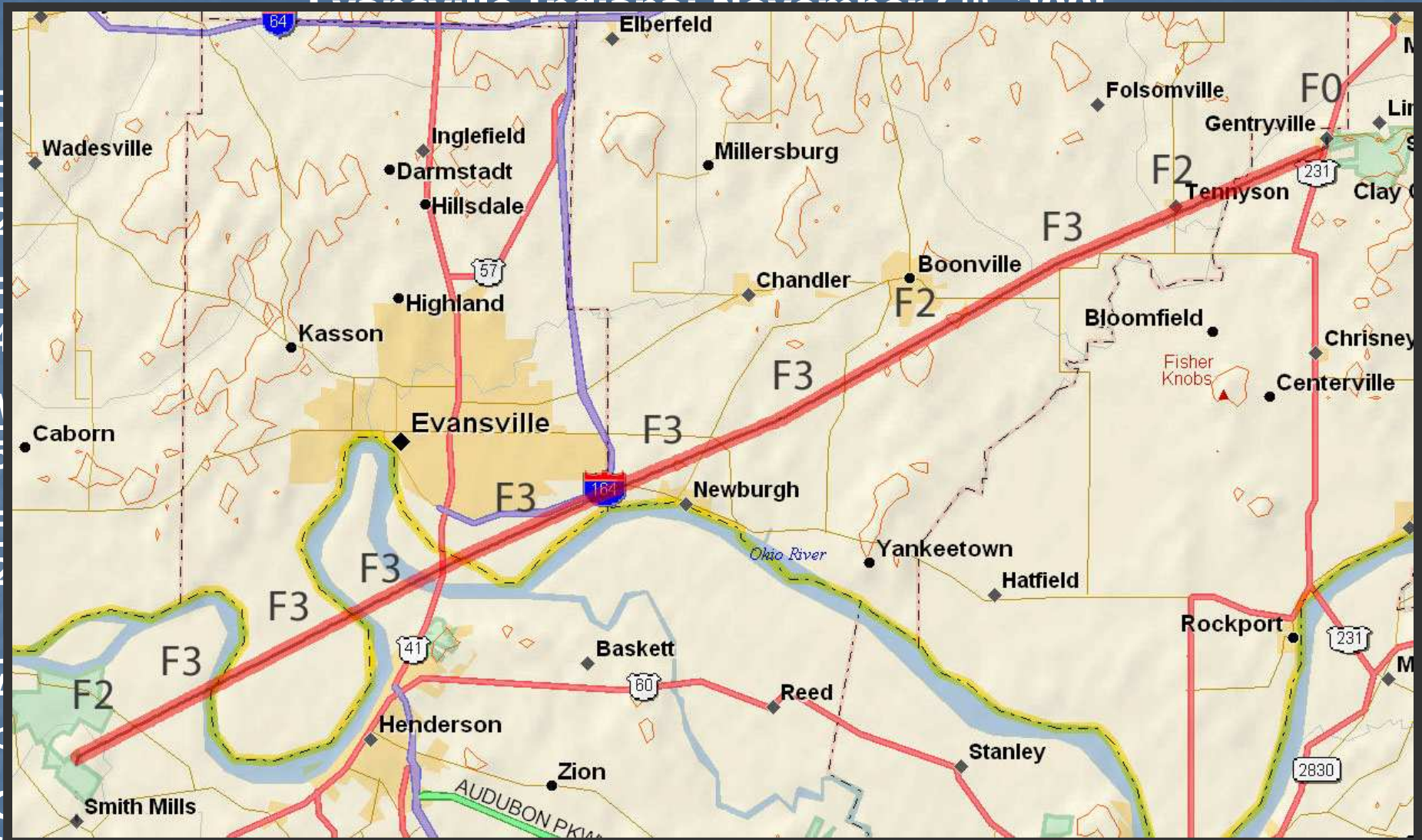
Christine Wielgos & Pat Spoden

National Weather Service Paducah, KY



Tornado captured by webcam at Deaconess Women's Hospital in

Evansville, Indiana, November 6th, 2005



for 45 minutes

Deadliest Tornado in NWS Paducah Forecast Area since: <1950

139AM-222AM

More Tornado Facts

An aerial photograph showing a wide, straight path of destruction across a rural landscape. The path is a mix of brown earth and debris, cutting through brown, harvested fields. In the distance, a small cluster of buildings, including what appears to be a mobile home park, is visible. A road runs parallel to the path. The sky is not visible, and the overall tone is somber due to the destruction.

- Sustained a high intensity (Mainly Upper F2 To Upper F3)
- Tornado was intense (F2-F3) minutes after touchdown.
 - 41 mile path crossed the Ohio River 3 times
 - Total dollar loss in the hundreds of millions
 - Traveled at speeds 60 to 70 mph!
 - 500+ Buildings/Homes Destroyed
 - 3 Locations at upper end of F3
- 25 fatalities: 20 at Eastbrook Mobile Home Park
 - 24 of 25 fatalities in mobile homes
 - 1 vehicle related fatality

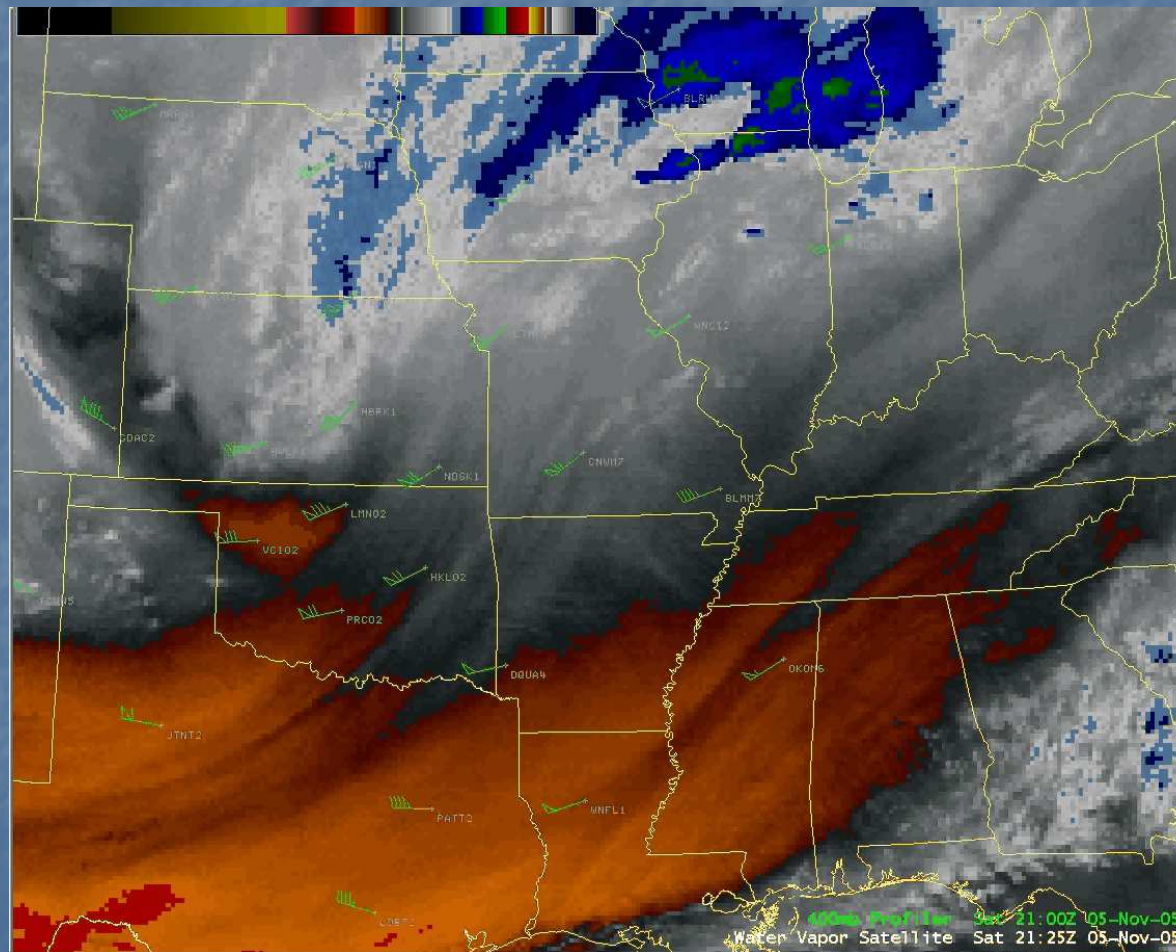
So why did this happen??

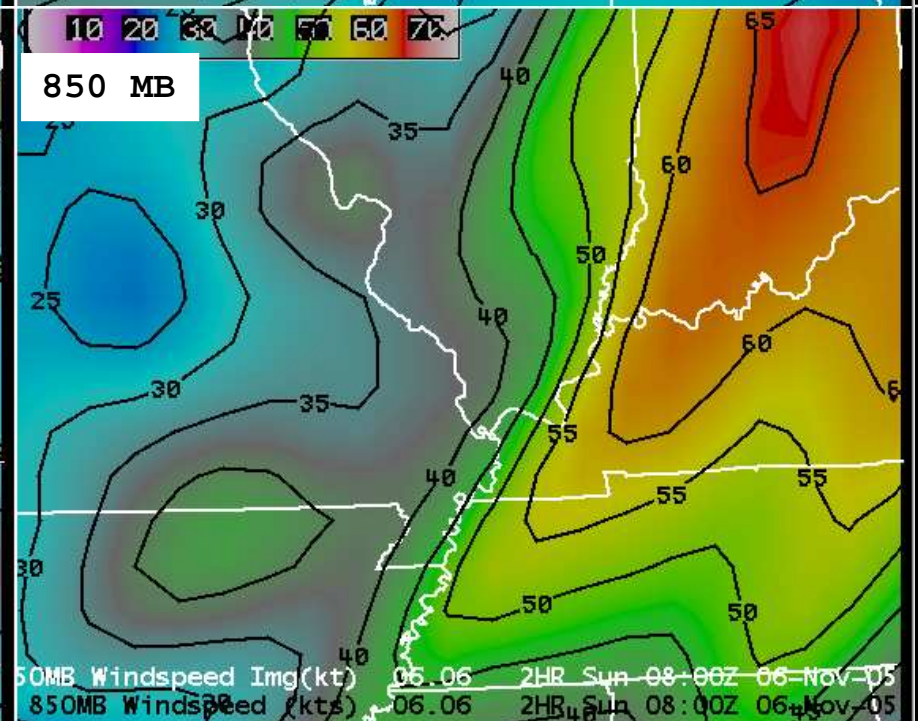
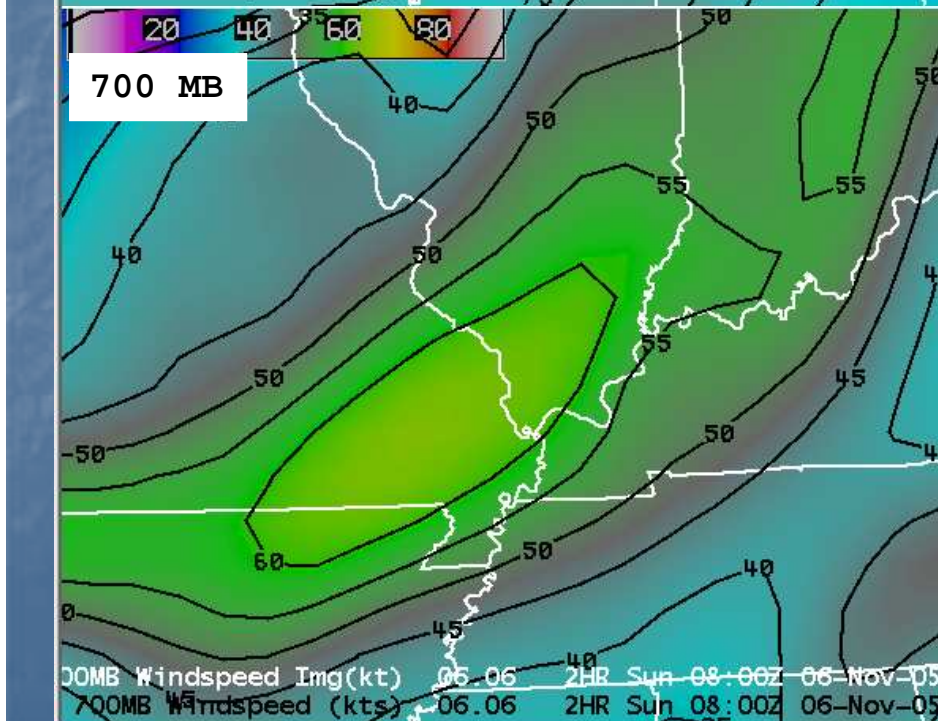
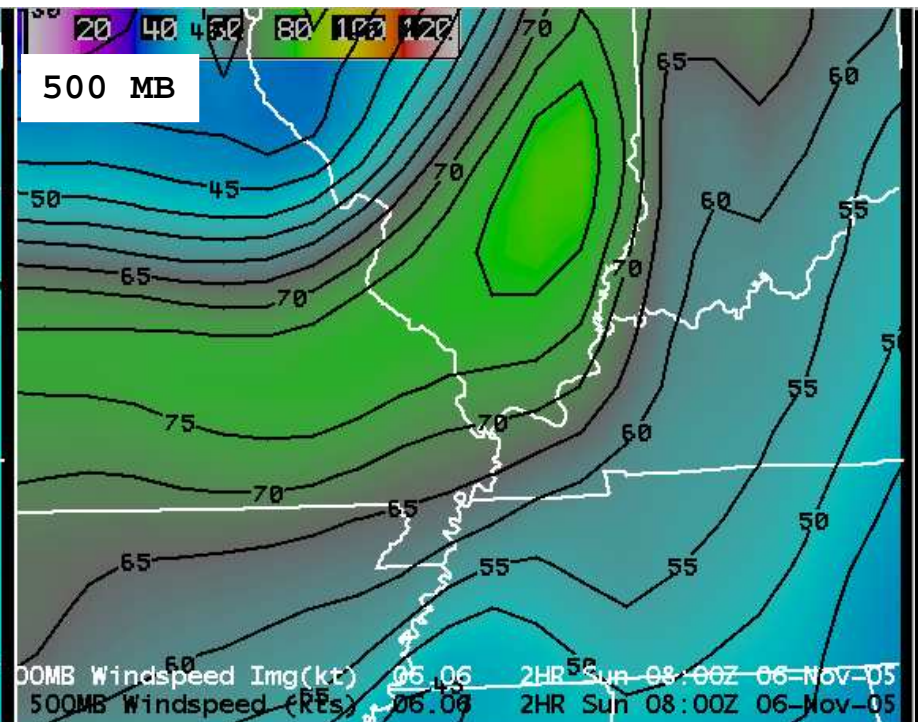
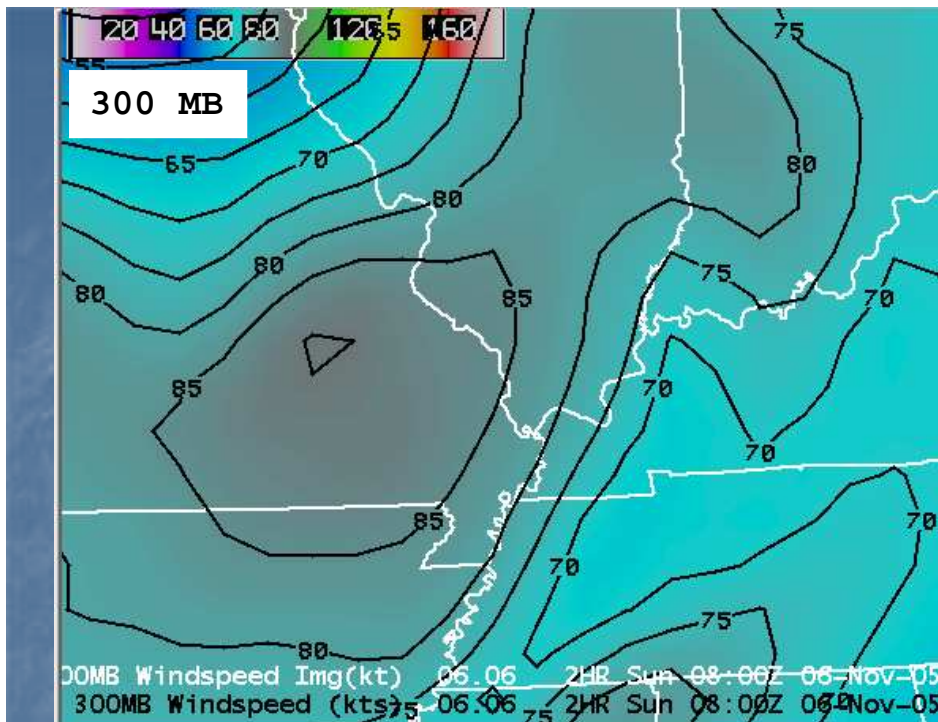
**Let's take a closer look at some
hourly data...**



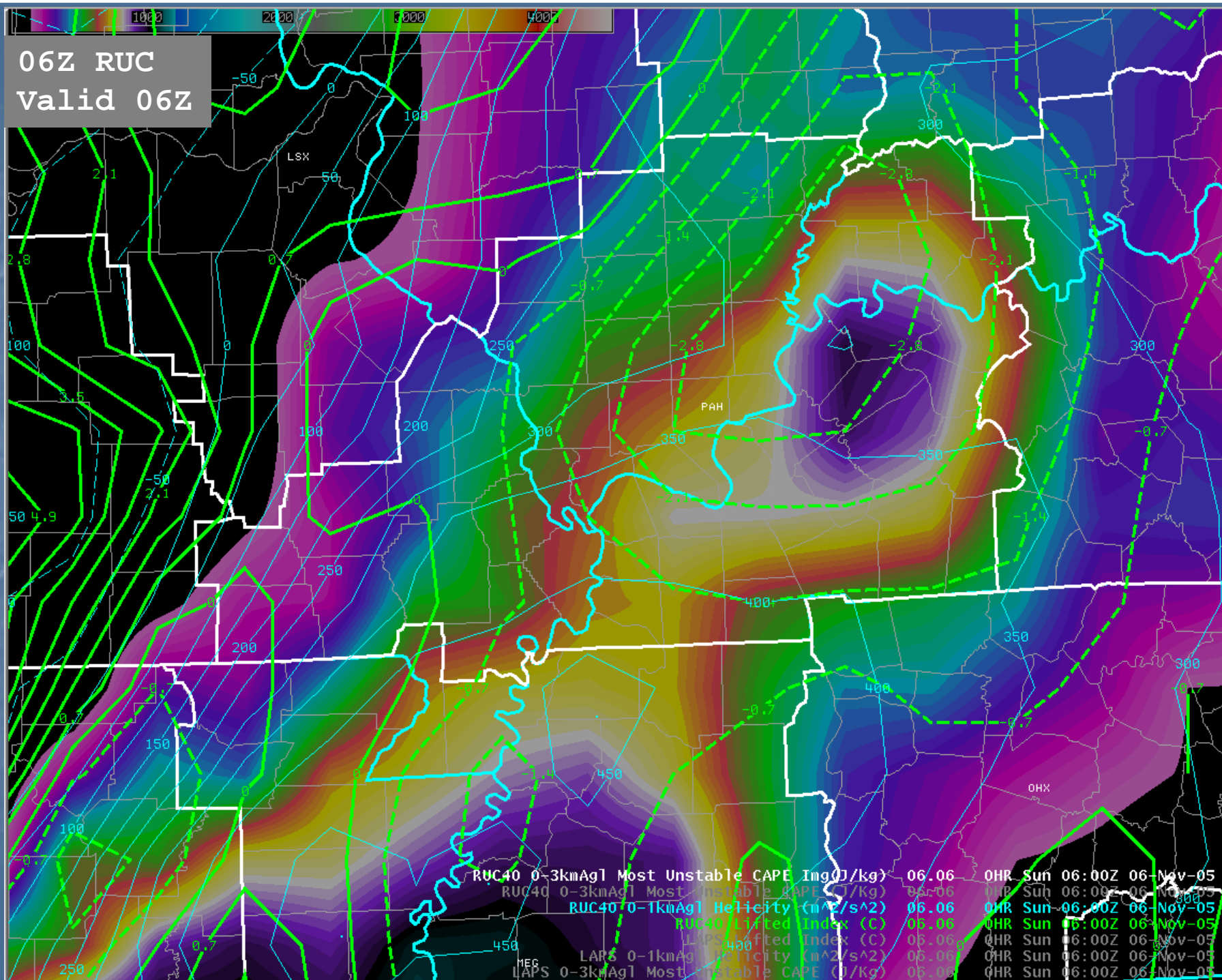
Damage in Degonia Springs, IN

Water Vapor 2125 UTC – 0432 UTC

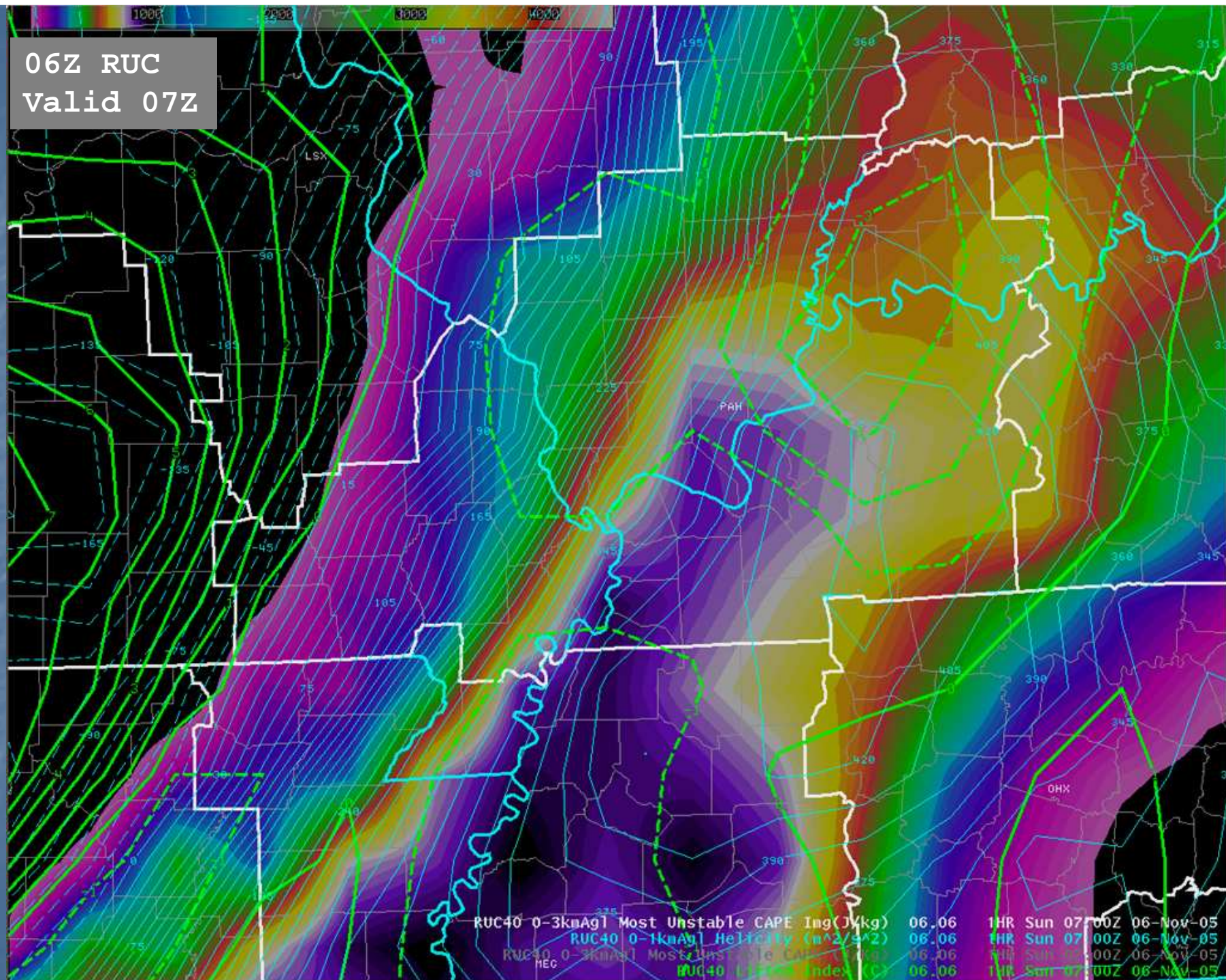




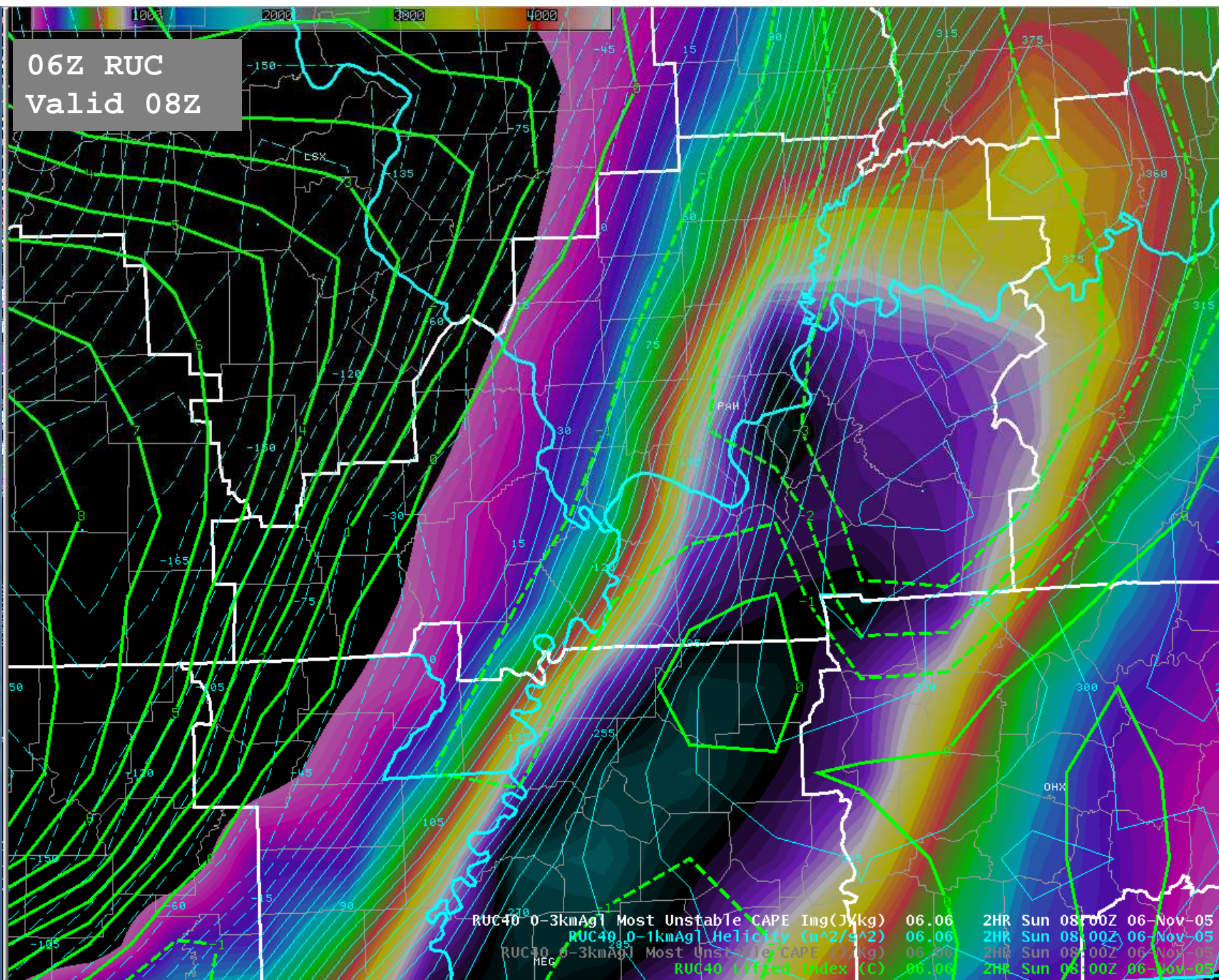
06Z RUC
Valid 06Z



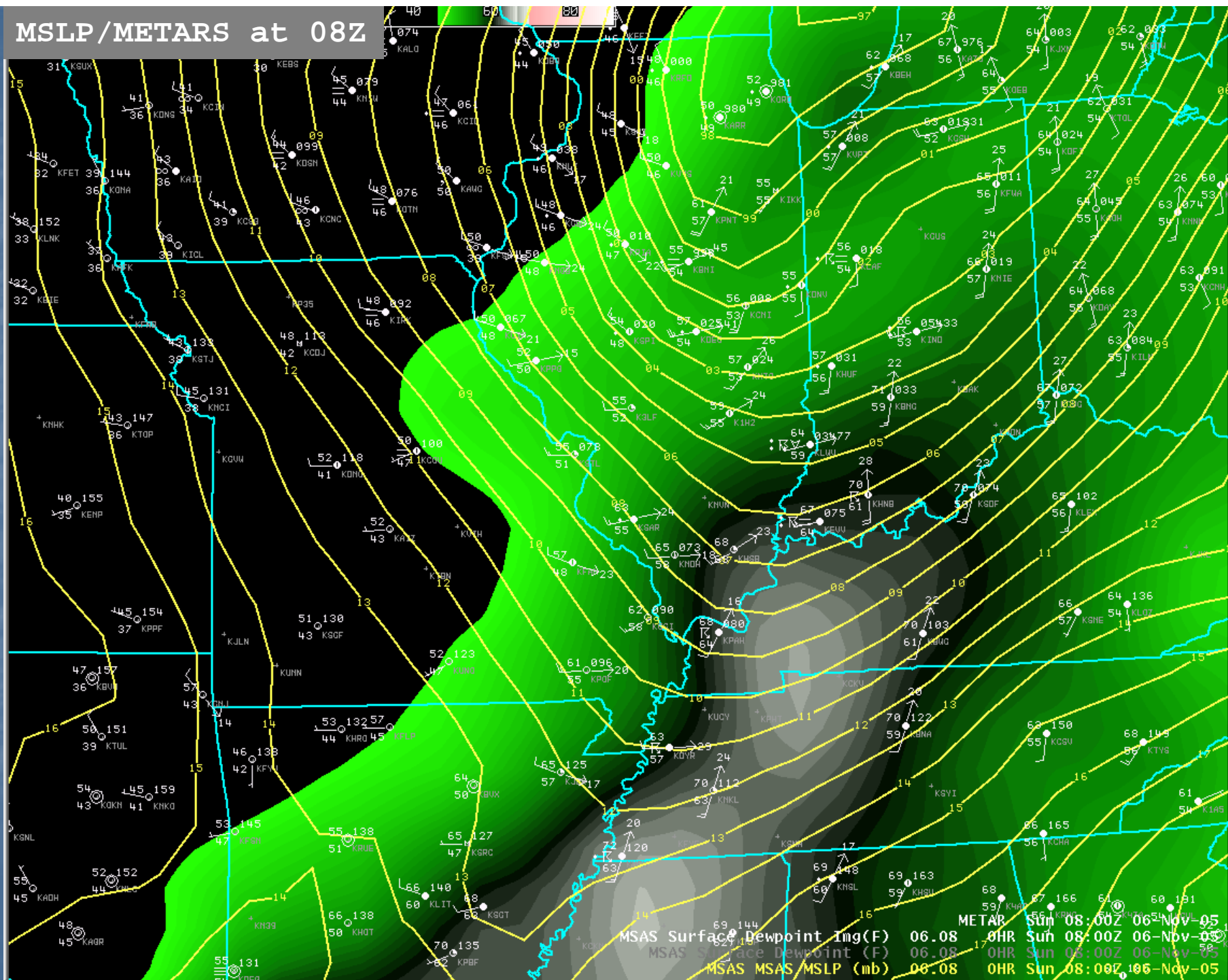
06Z RUC
Valid 07Z



06Z RUC
Valid 08Z



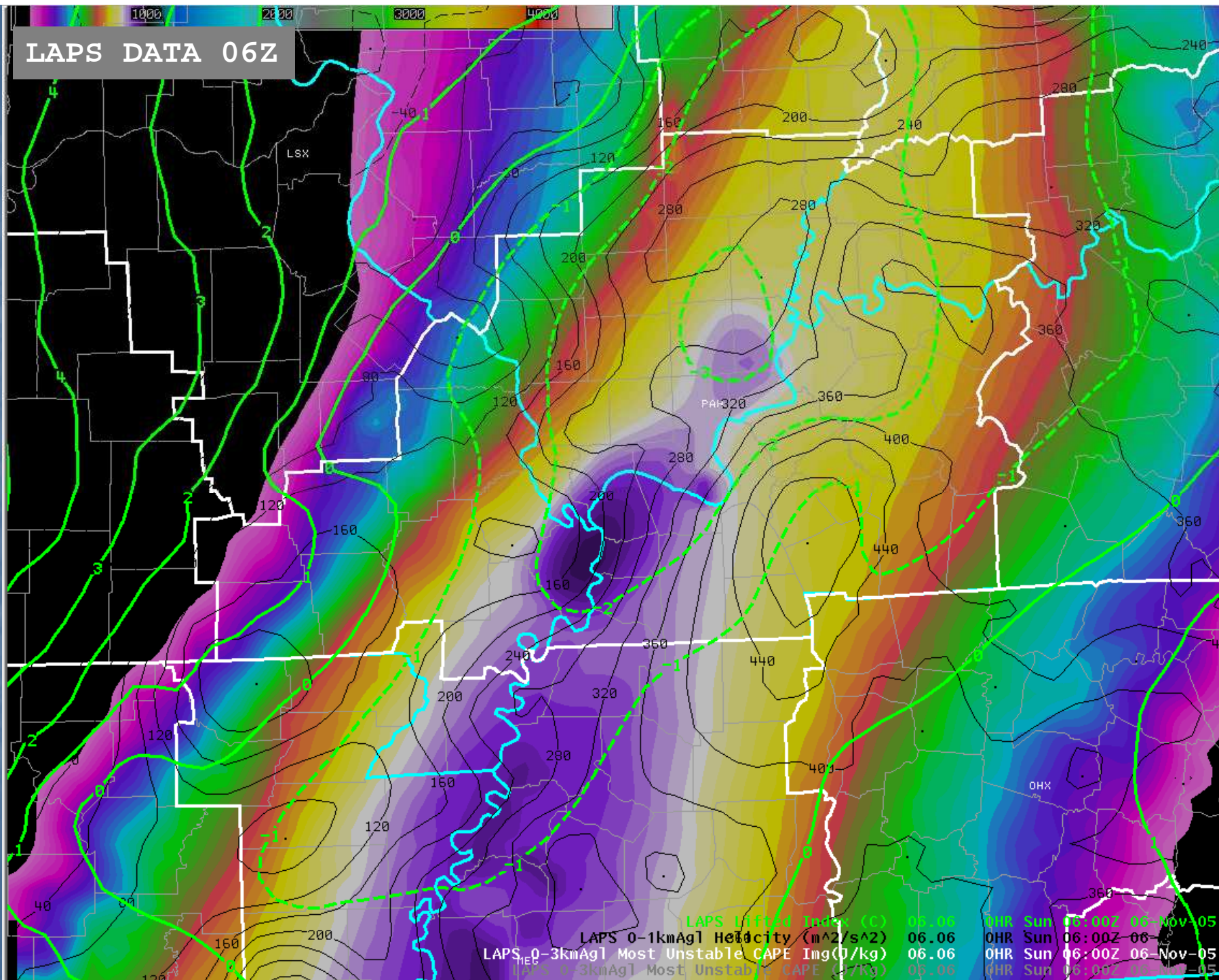
MSLP/METARS at 08Z



MSAS Surface Dewpoint (mg(F)) 06.08
 MSAS Surface Dewpoint (F) 06.08
 MSAS MSLP (mb) 06.08

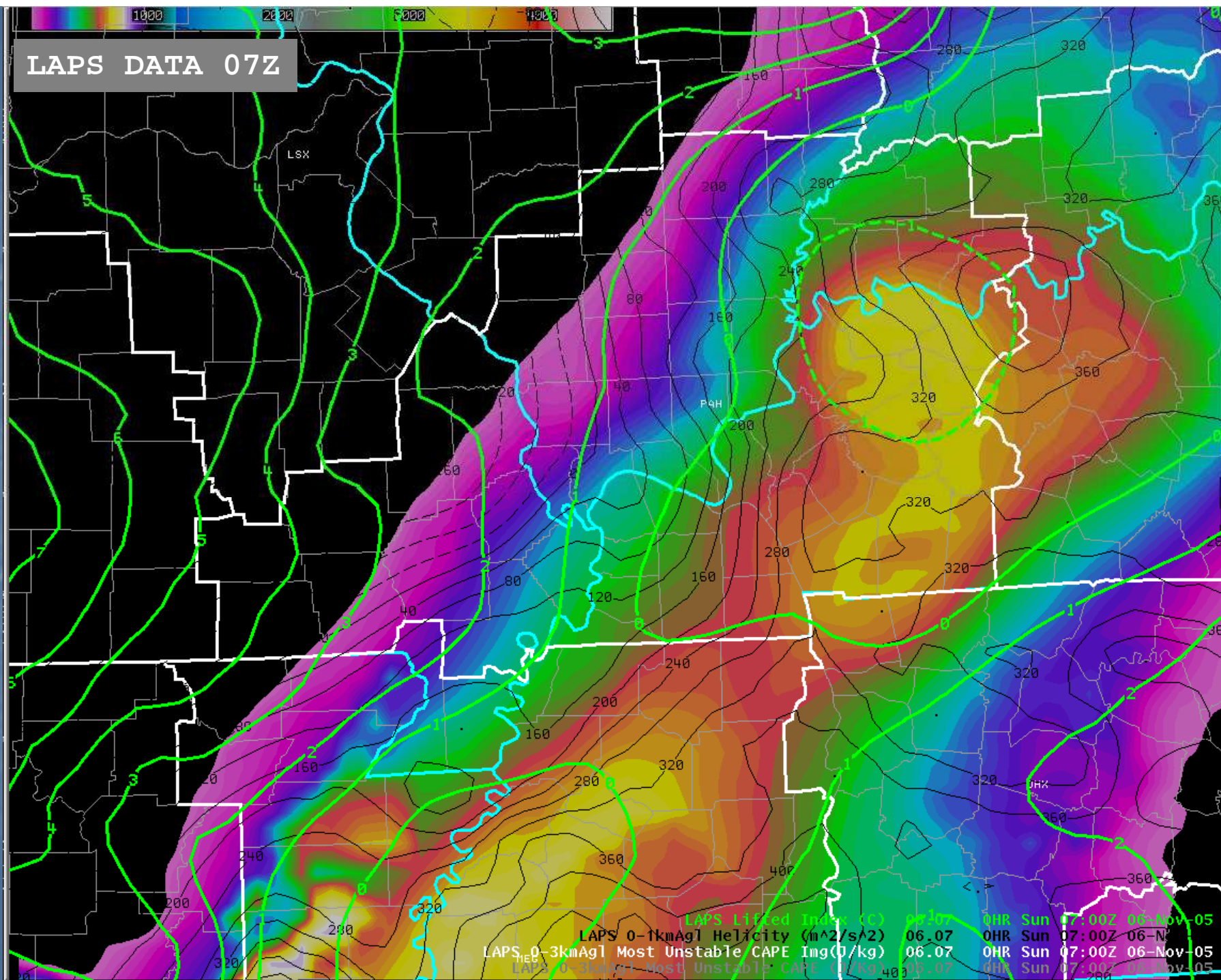
METAR Sun 08:00Z 06-Nov-05
 OHR Sun 08:00Z 06-Nov-05
 OHR Sun 08:00Z 06-Nov-05
 OHR Sun 08:00Z 06-Nov-05

LAPS DATA 06Z



LAPS Lifted Index (C)	06.06	06Z Sun 06:00Z 06-Nov-05
LAPS 0-3km Agl Most Unstable CAPE (J/kg)	06.06	06Z Sun 06:00Z 06-Nov-05
LAPS 0-3km Agl Most Unstable CAPE (J/kg)	06.06	06Z Sun 06:00Z 06-Nov-05

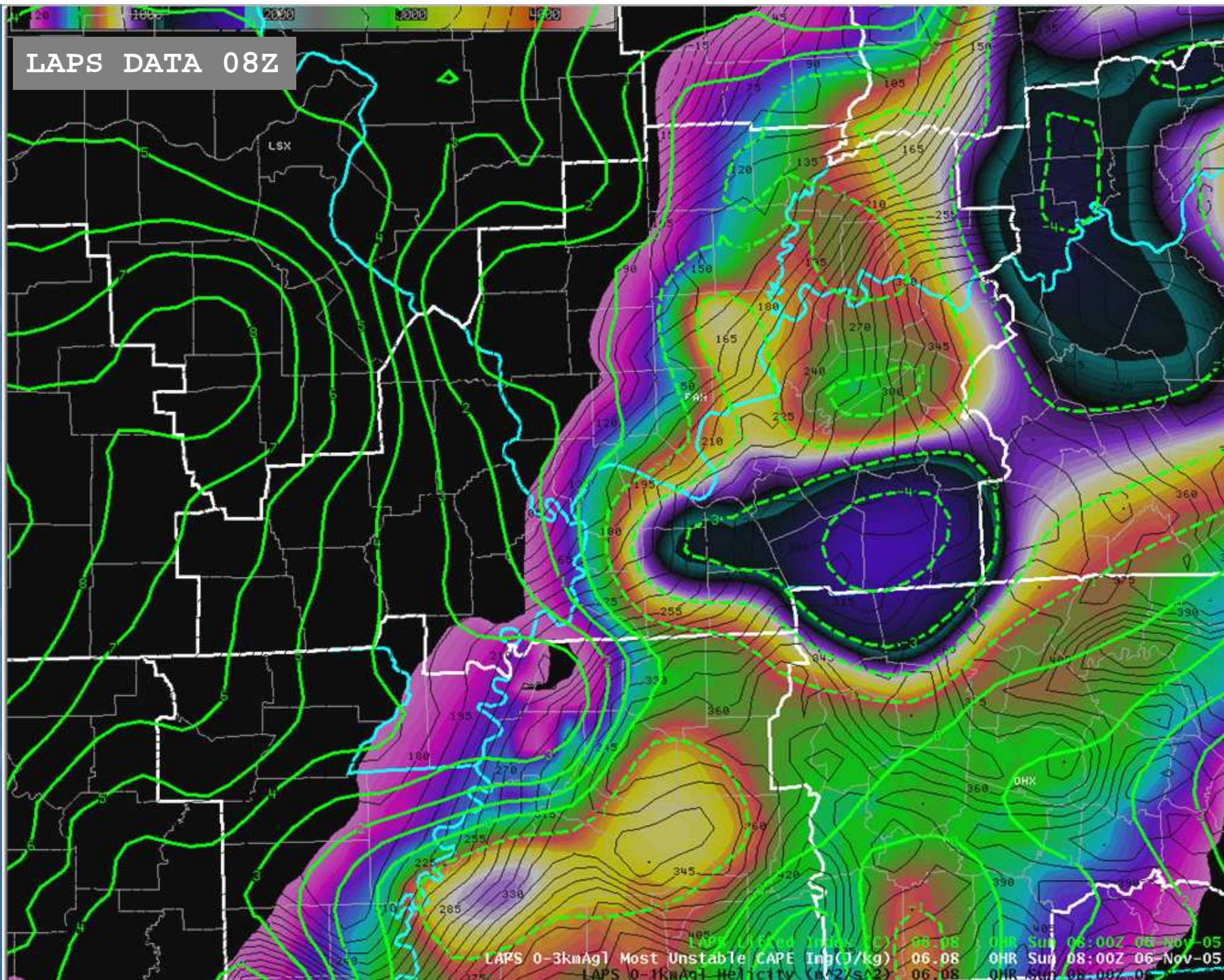
LAPS DATA 07Z



LAPS 0-1km Agl Helicity (m^2/s^2) 06.07
 LAPS 0-3km Agl Most Unstable CAPE (J/kg) 06.07
 LAPS 0-5km Agl Most Unstable CAPE (J/kg) 06.07

Time	Day	Date
00Z	Sun	06-Nov-05
07:00Z	Sun	06-Nov-05
07:00Z	Sun	06-Nov-05
07:00Z	Sun	06-Nov-05

LAPS DATA 08Z





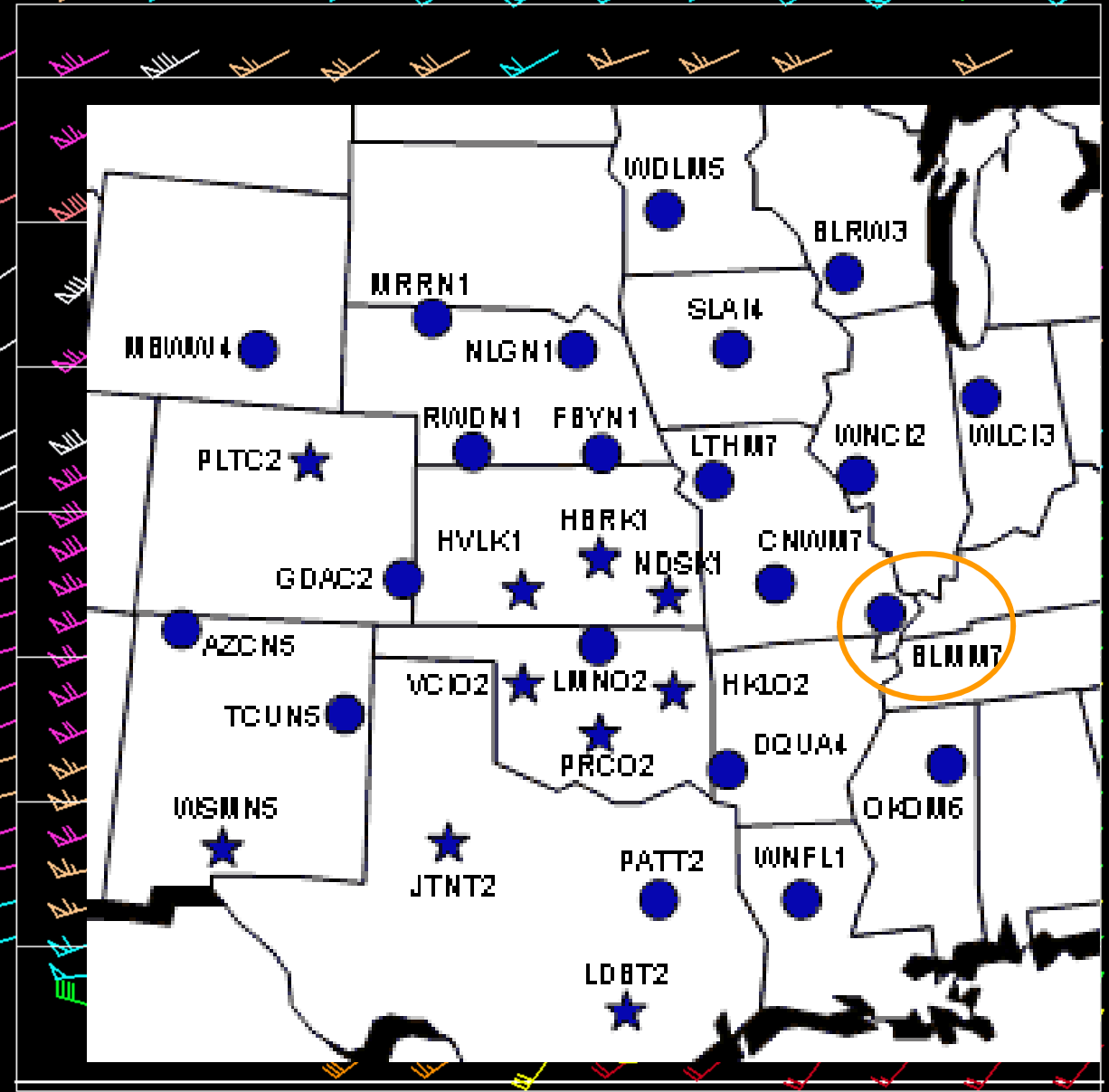
lo mode

hi/lo avg

hi mode

14k m
12k m
10k m
8k m
6k m
4k m
2k m
0k m

150
200
250
300
400
500
700
850
1000

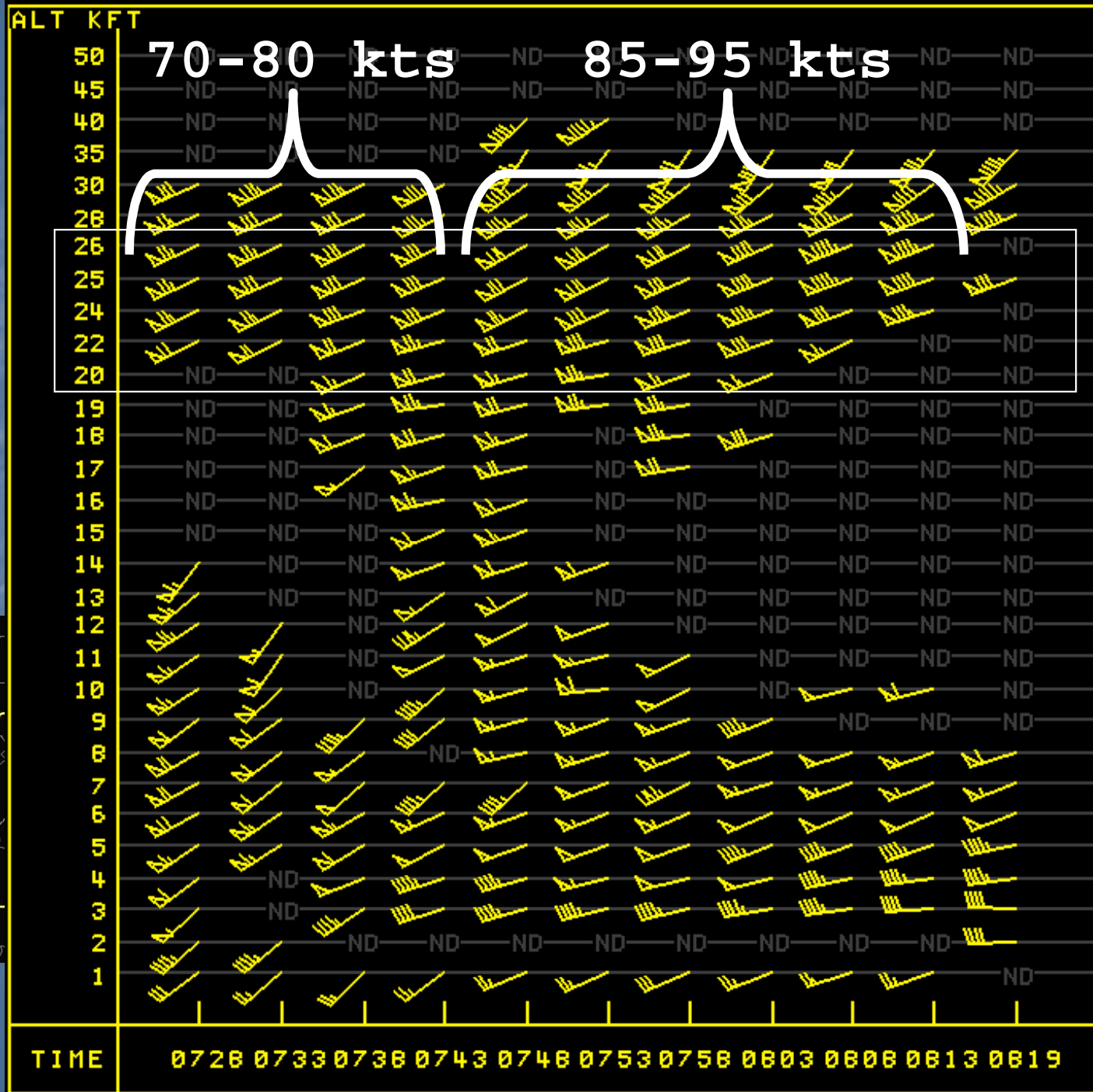
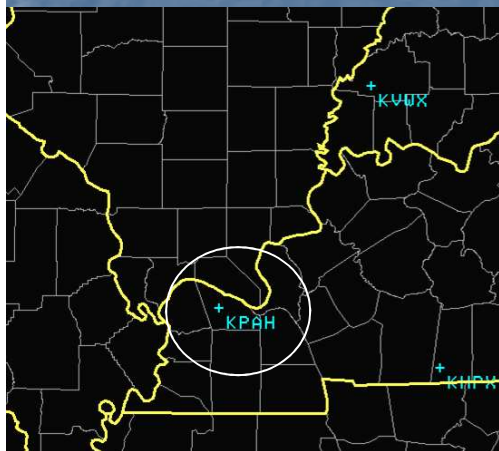


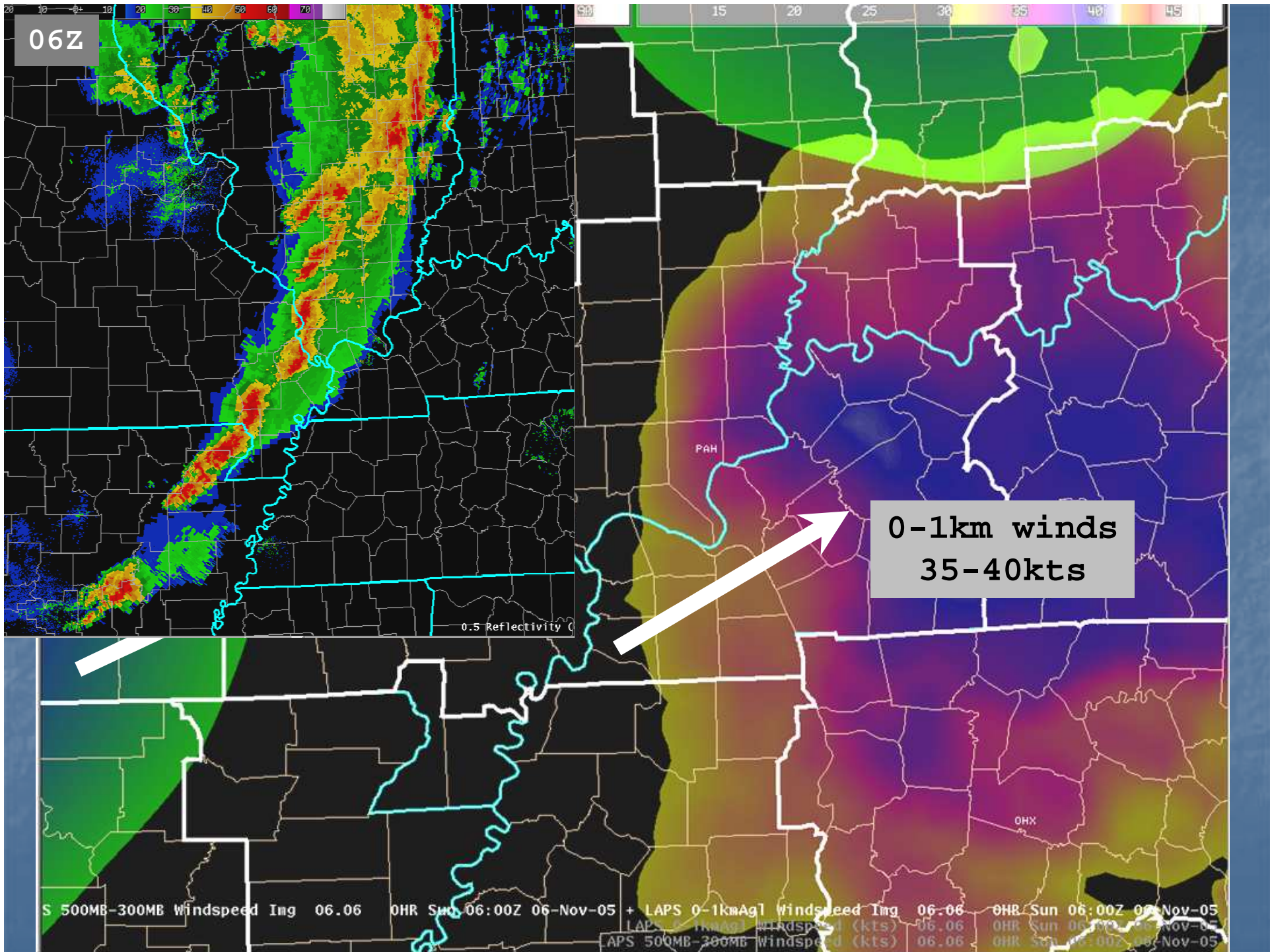
09 08 07 06 05 04 03 02 01 00 23 22 21

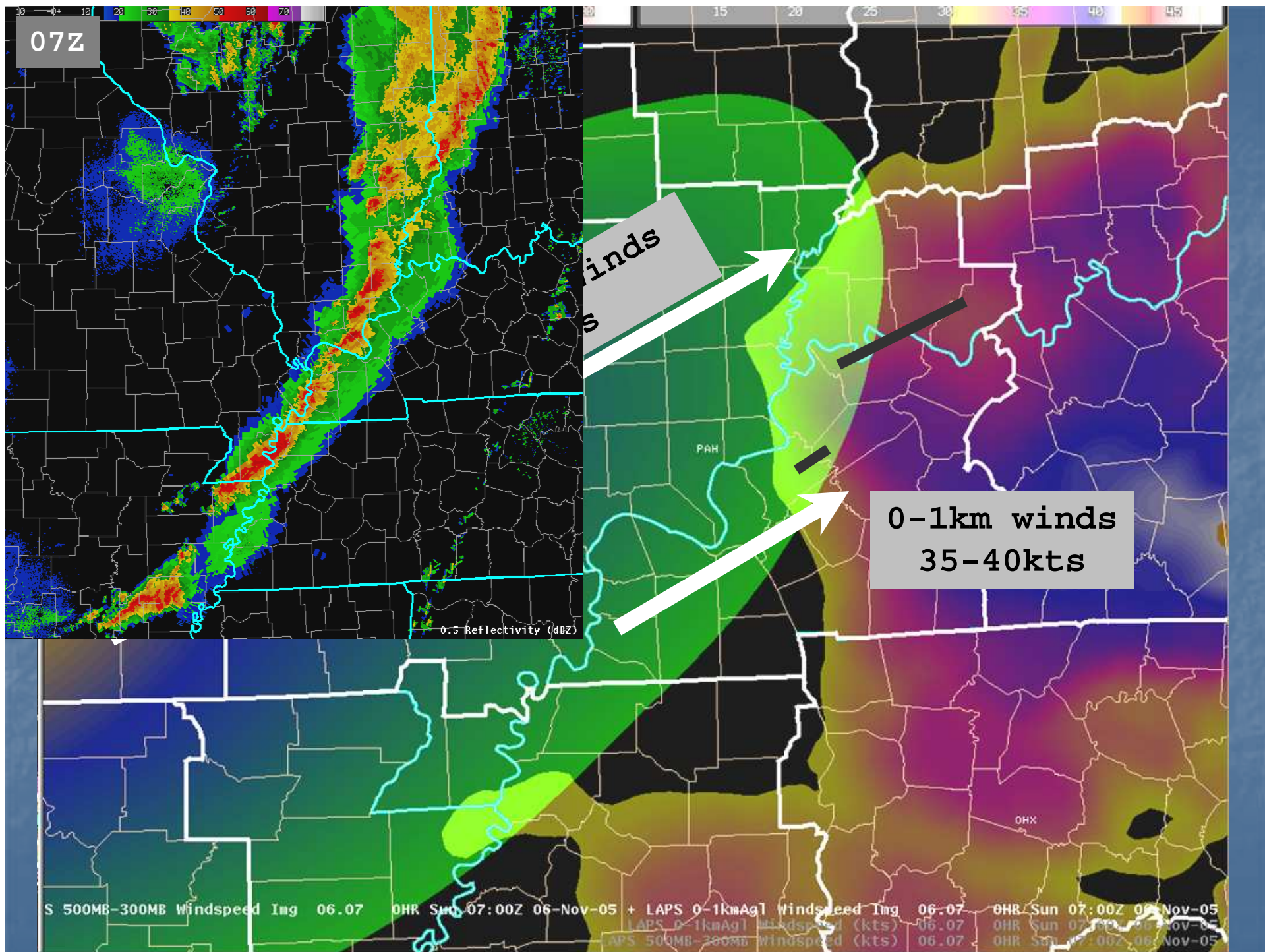
Bloomfield M0 (kts) Sun 09:00Z 06-Nov-05

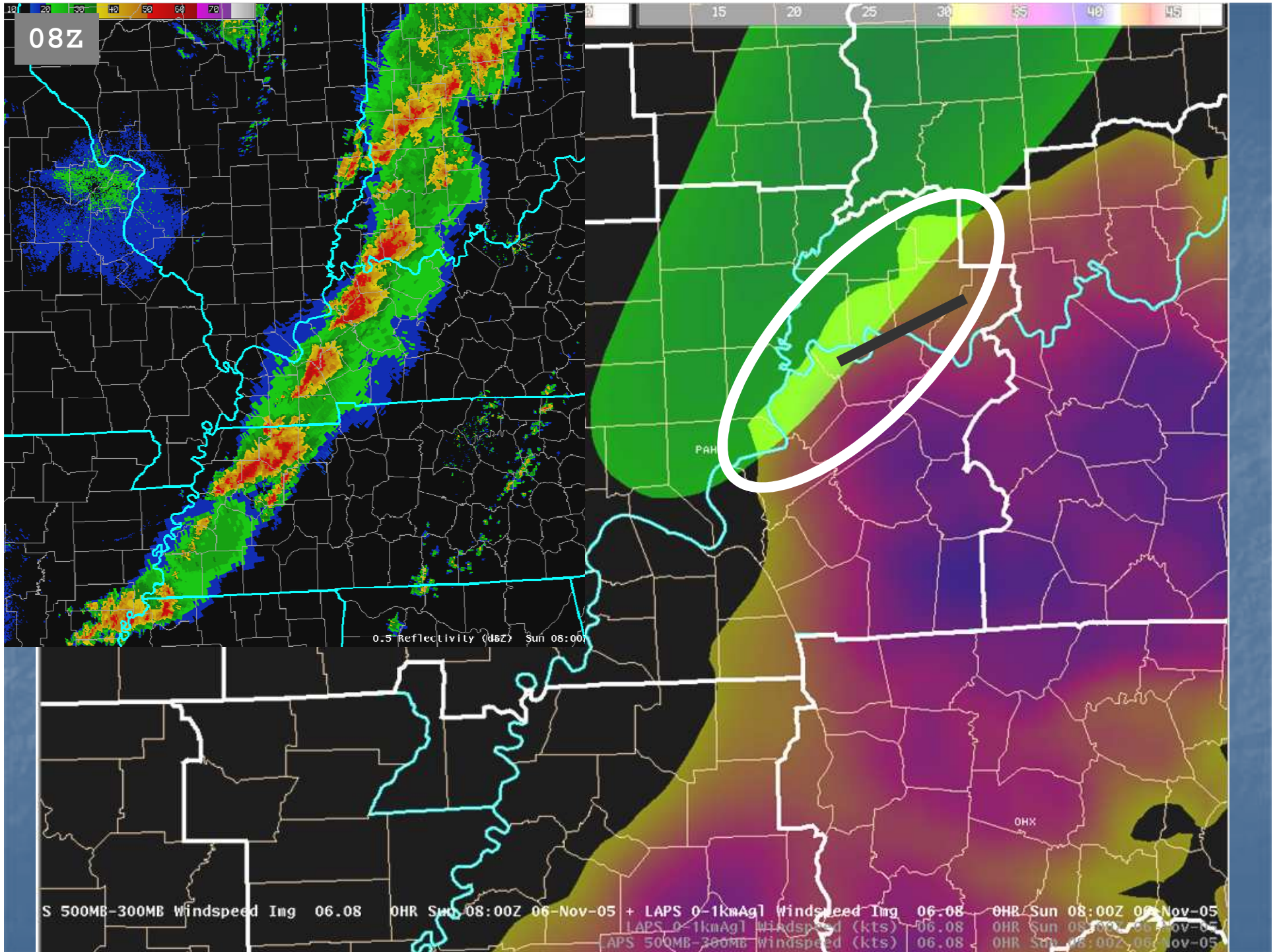
KPAH:
PADUCAH

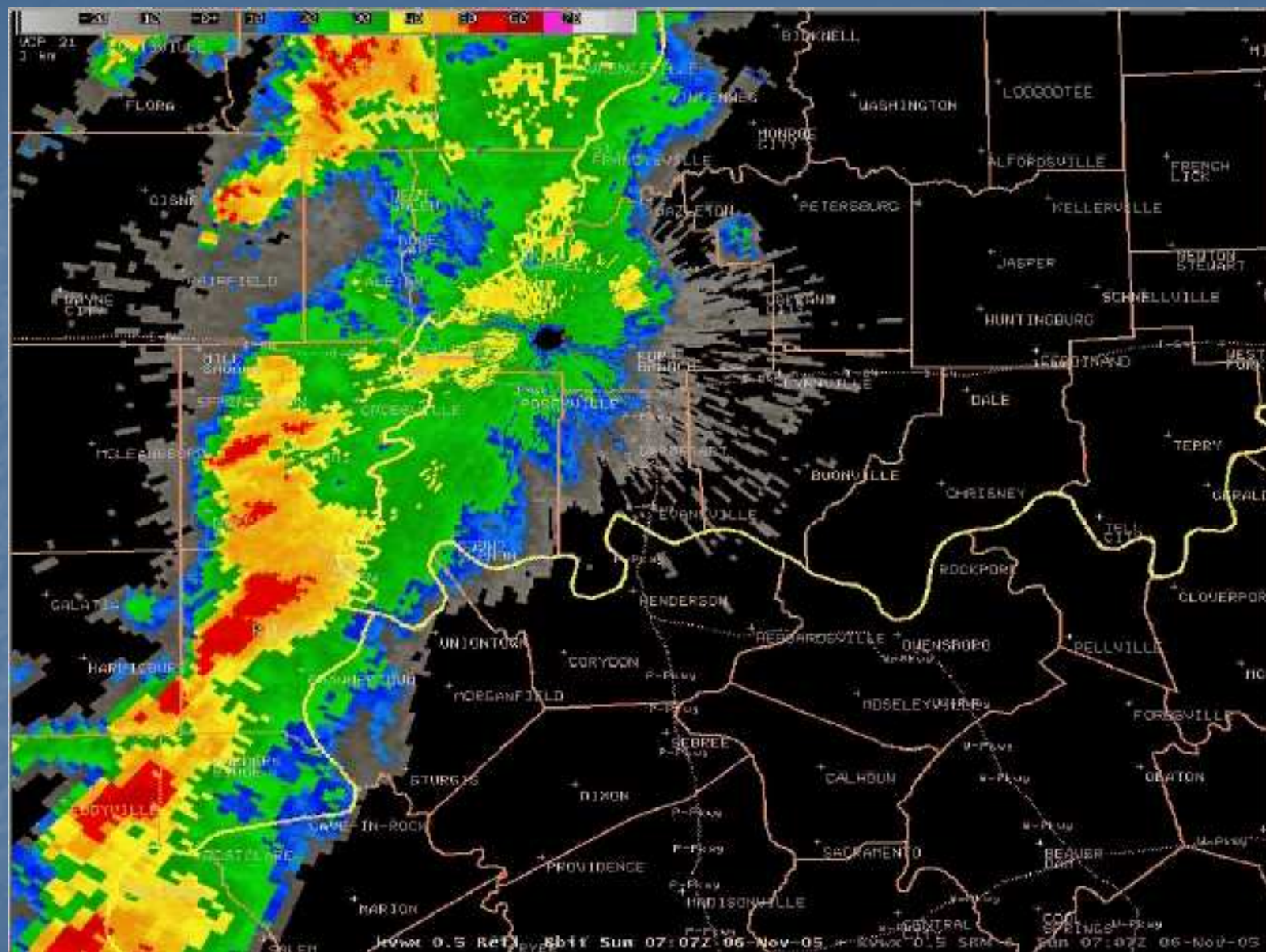
VAD
WIND
PROFILER



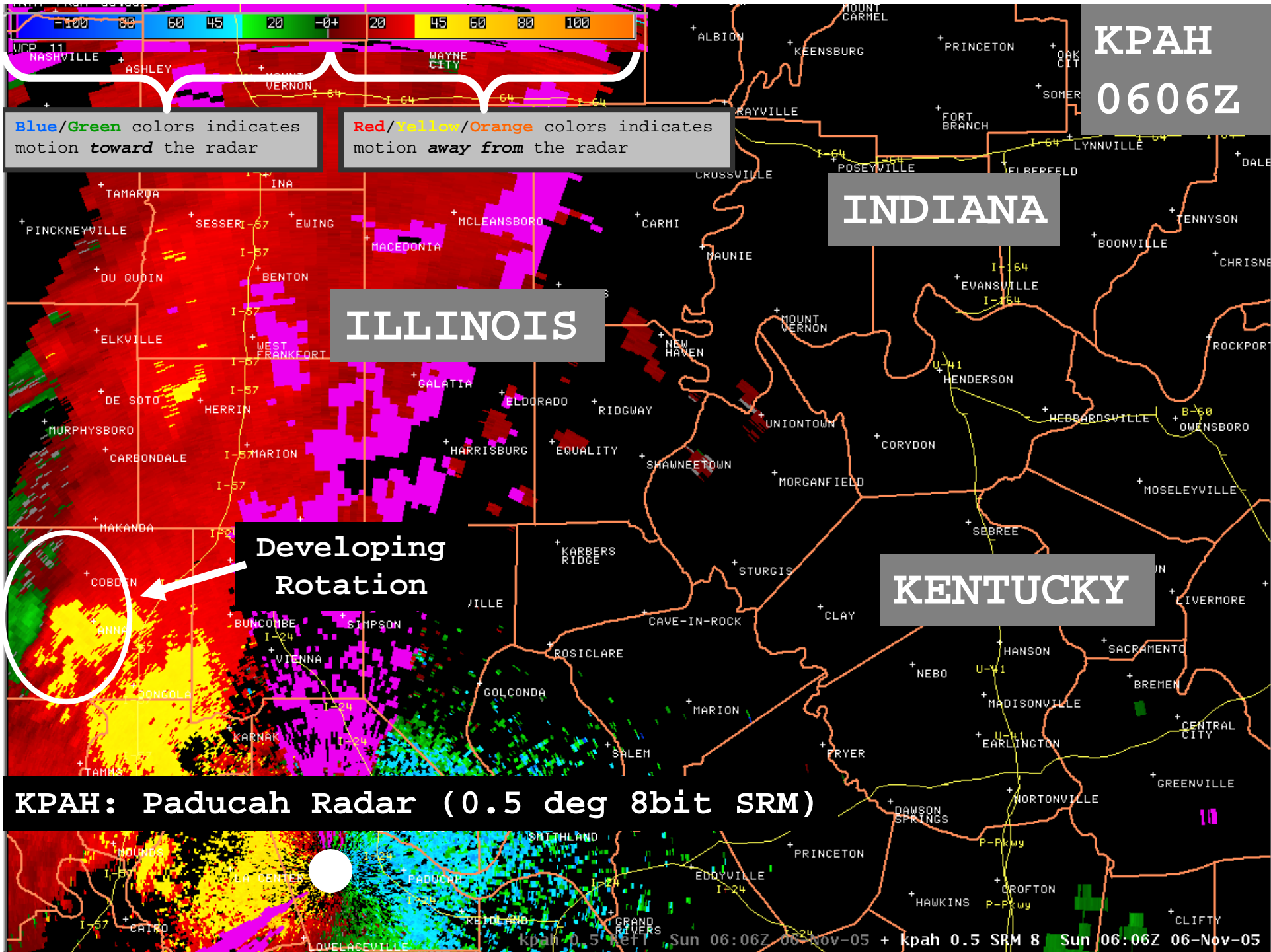








KVWX 0.5 deg REFLECTIVITY:



KPAH
0611Z

Map showing radar coverage and precipitation intensity (color scale) over a region including cities like Nashville, Memphis, and Knoxville. A white circle highlights a specific area of interest near the bottom left, around the town of Cobden.

Legend for precipitation intensity (dBZ):

- Green: 10-15
- Yellow: 16-20
- Orange: 21-25
- Red: 26-30
- Dark Red: 31-35
- Purple: 36-40
- Dark Purple: 41-45
- Black: 46-50

Map includes labels for various cities and towns, as well as a scale bar and a legend for precipitation intensity.

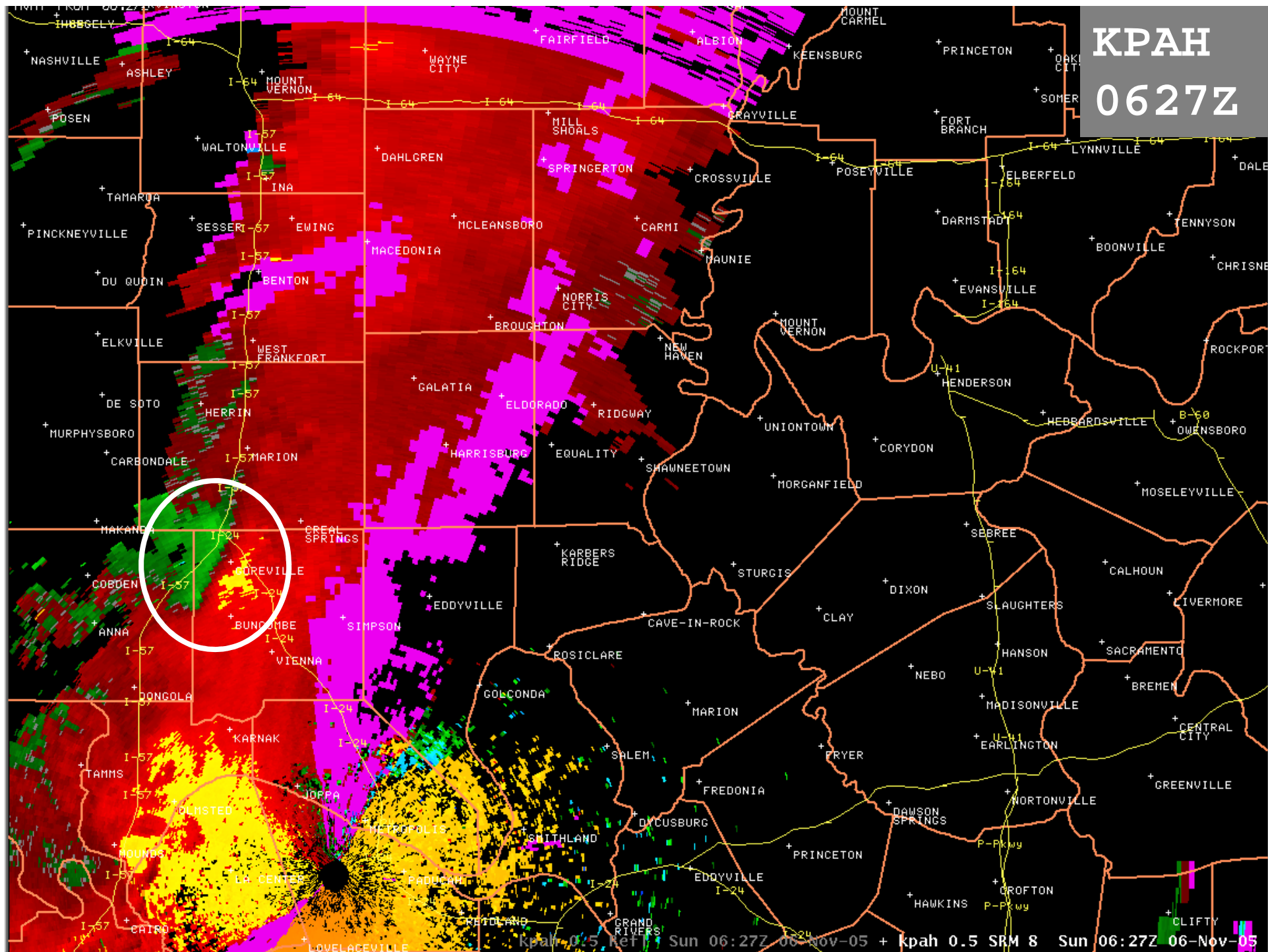
Map data: kpa 0.5 Refl Sun 06:11Z 06-Nov-05 + kpa 0.5 SRM 8 Sun 06:11Z 06-Nov-05

~~kpah 0.5 Refl Sun 06:11Z 06-Nov-05 + kpah 0.5 SRM 8 Sun 06:11Z 06-Nov-05~~

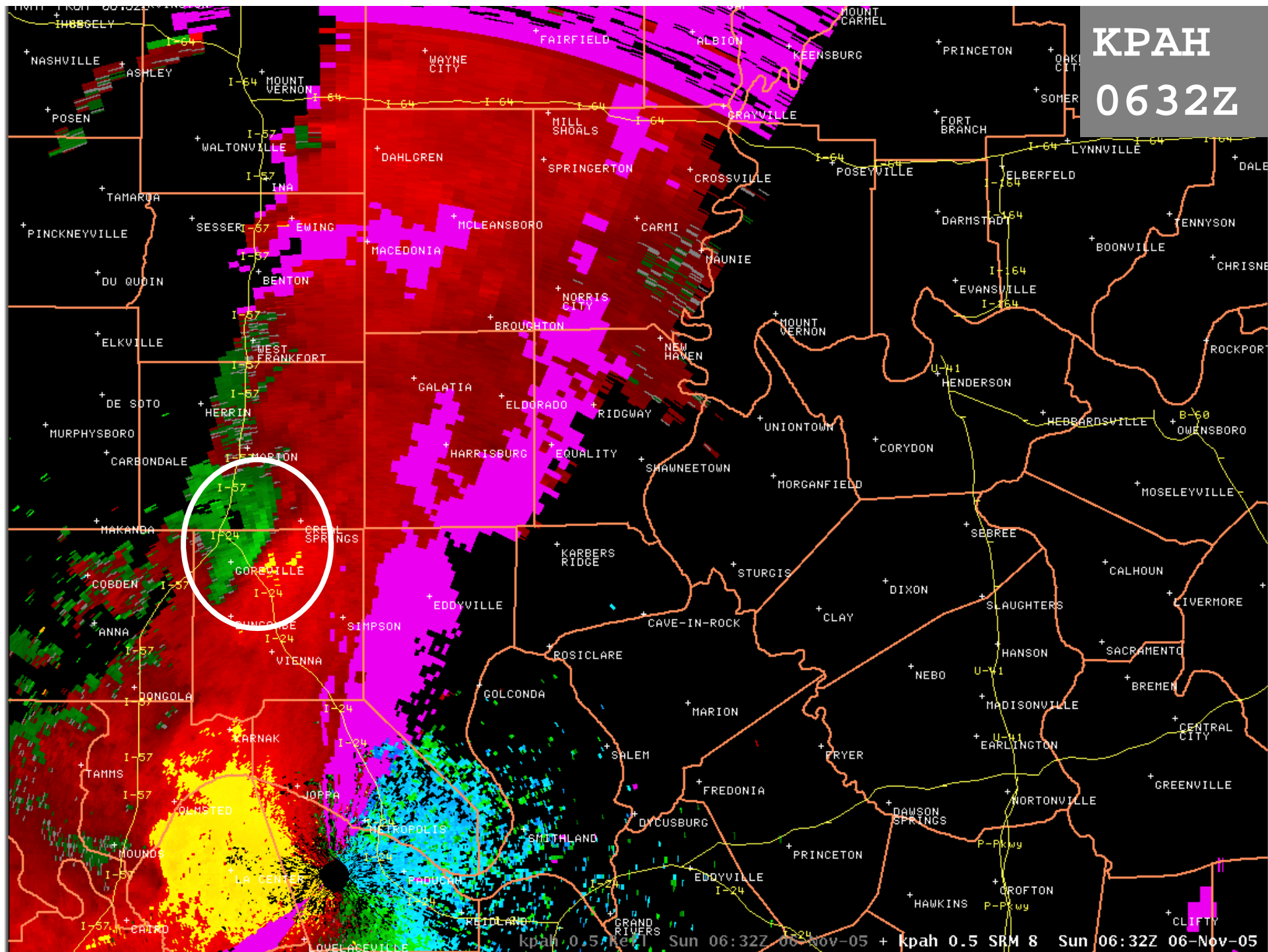
KPAH
0616Z

Map showing radar data for KPAH at 0616Z. The map displays various cities and towns, including Nashville, Memphis, and Knoxville. A white circle highlights a specific area of interest in the lower-left quadrant of the map.

KPAH
0627Z



KPAH
0632Z



KPAH
0637Z

$V_r = 33 \text{ kts @ } 31 \text{ nm}$
(2200 ft AGL)

KPAH
0642Z

$V_r = 33 \text{ kts @ } 33 \text{ nm}$
(2400 ft AGL)

Kpah 0.3 Refl Sun 06:42Z 06-Nov-05 + kpah 0.5 SRM 8 Sun 06:42Z 06-Nov-05

KPAH
0647Z

$V_r = 35 \text{ kts @ } 35 \text{ nm}$
(2600 ft AGL)

KPAH
0652Z

$V_r = 31 \text{ kts @ } 38 \text{ nm}$
(2900 ft AGL)

kpah 0.5 Ref: Sun 06:52Z 06-Nov-05 + kpah 0.5 SRM 8 Sun 06:52Z 06-Nov-05

KPAH
0657Z

$V_r = 39 \text{ kts @ } 40 \text{ nm}$
(3200 ft AGL)

KPAH
0702Z

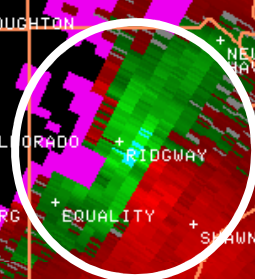
$V_r = 37 \text{ kts @ } 43 \text{ nm}$
(3500 ft AGL)

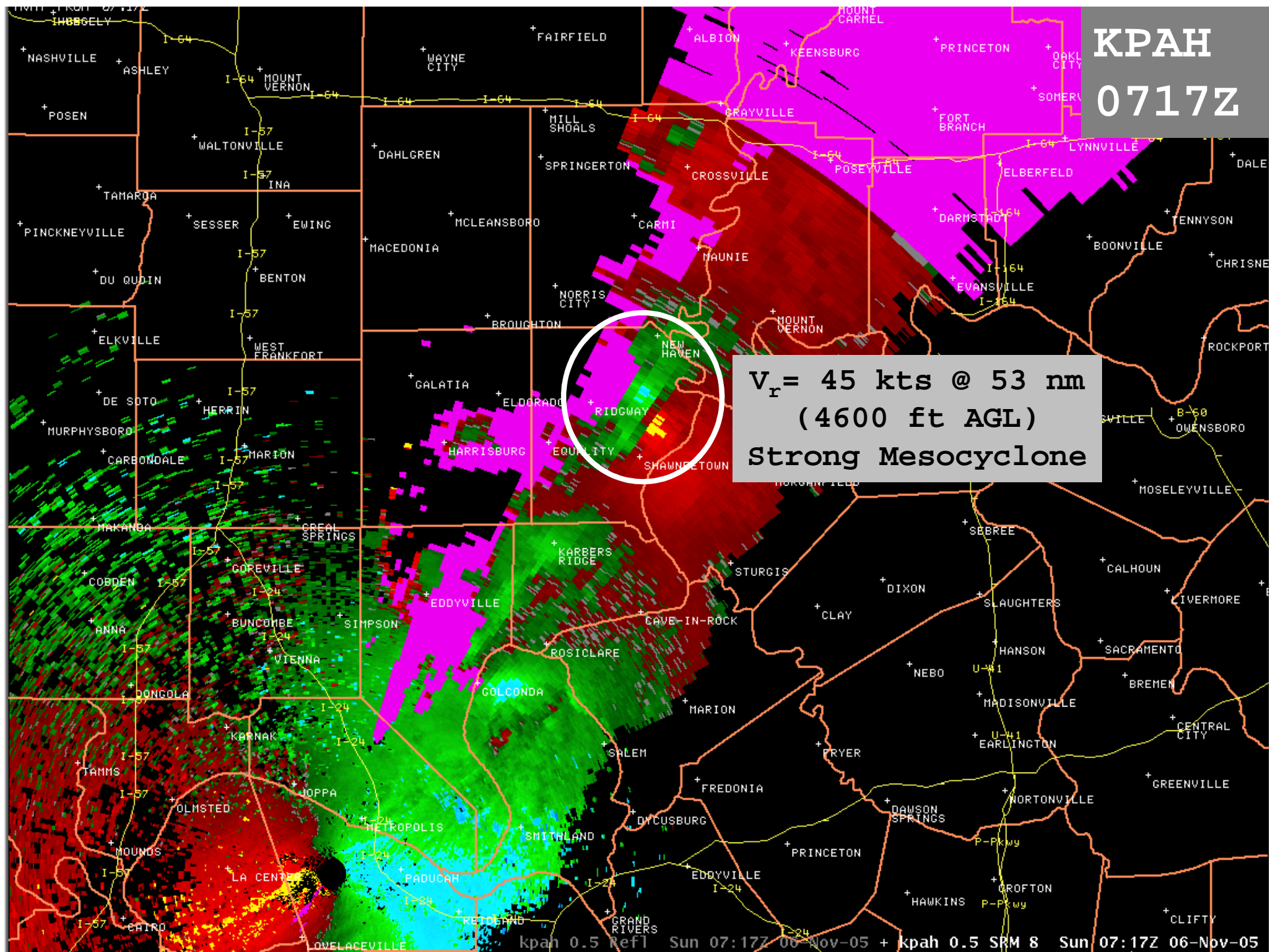
KPAH
0707Z

$V_r = 37 \text{ kts @ } 45 \text{ nm}$
(3800 ft AGL)

KPAH
0712Z

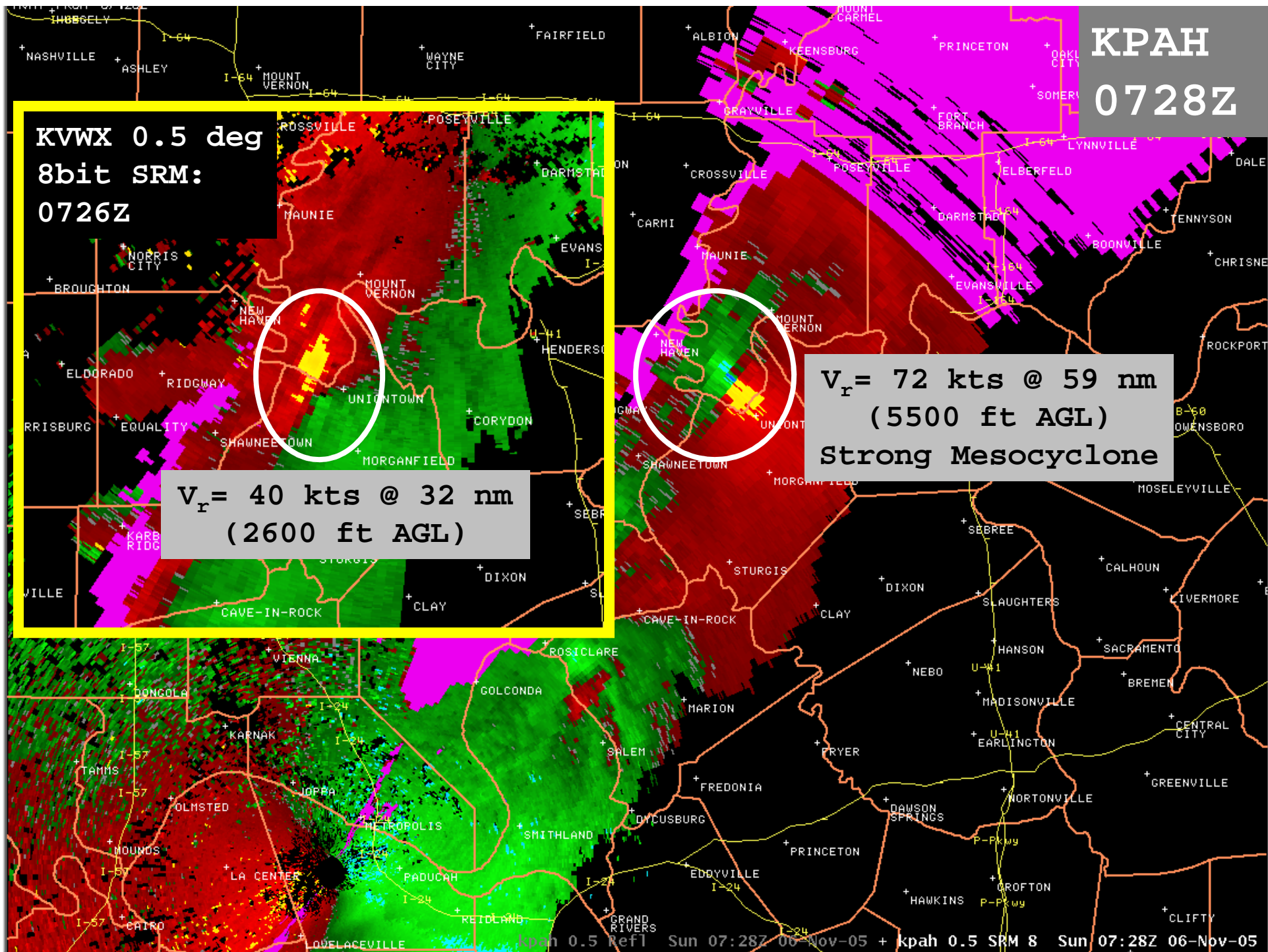
$V_r = 37 \text{ kts @ } 50 \text{ nm}$
(4200 ft AGL)

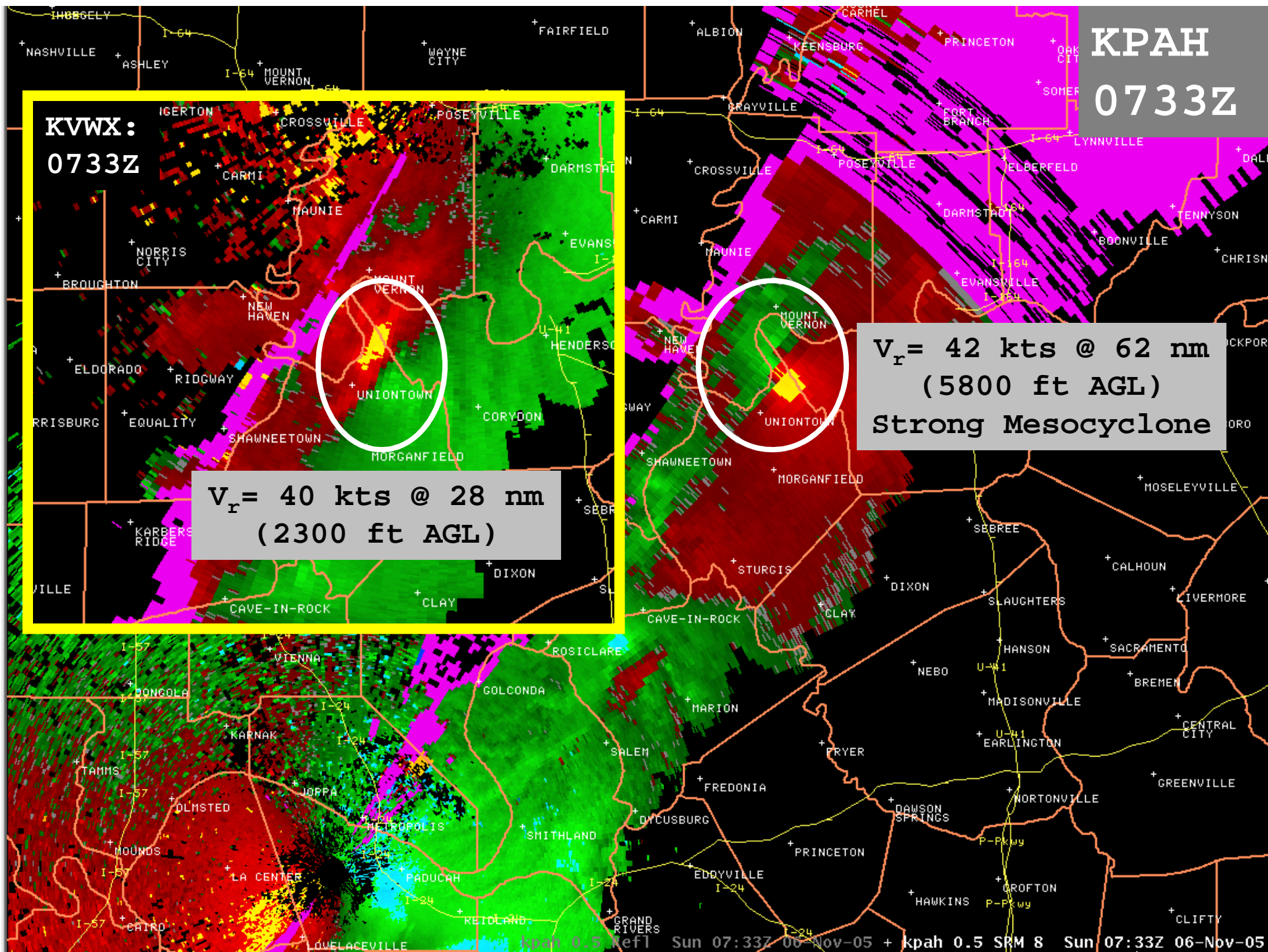




KPAH
0723Z

$V_r = 46 \text{ kts @ } 56 \text{ nm}$
(5000 ft AGL)
Strong Mesocyclone



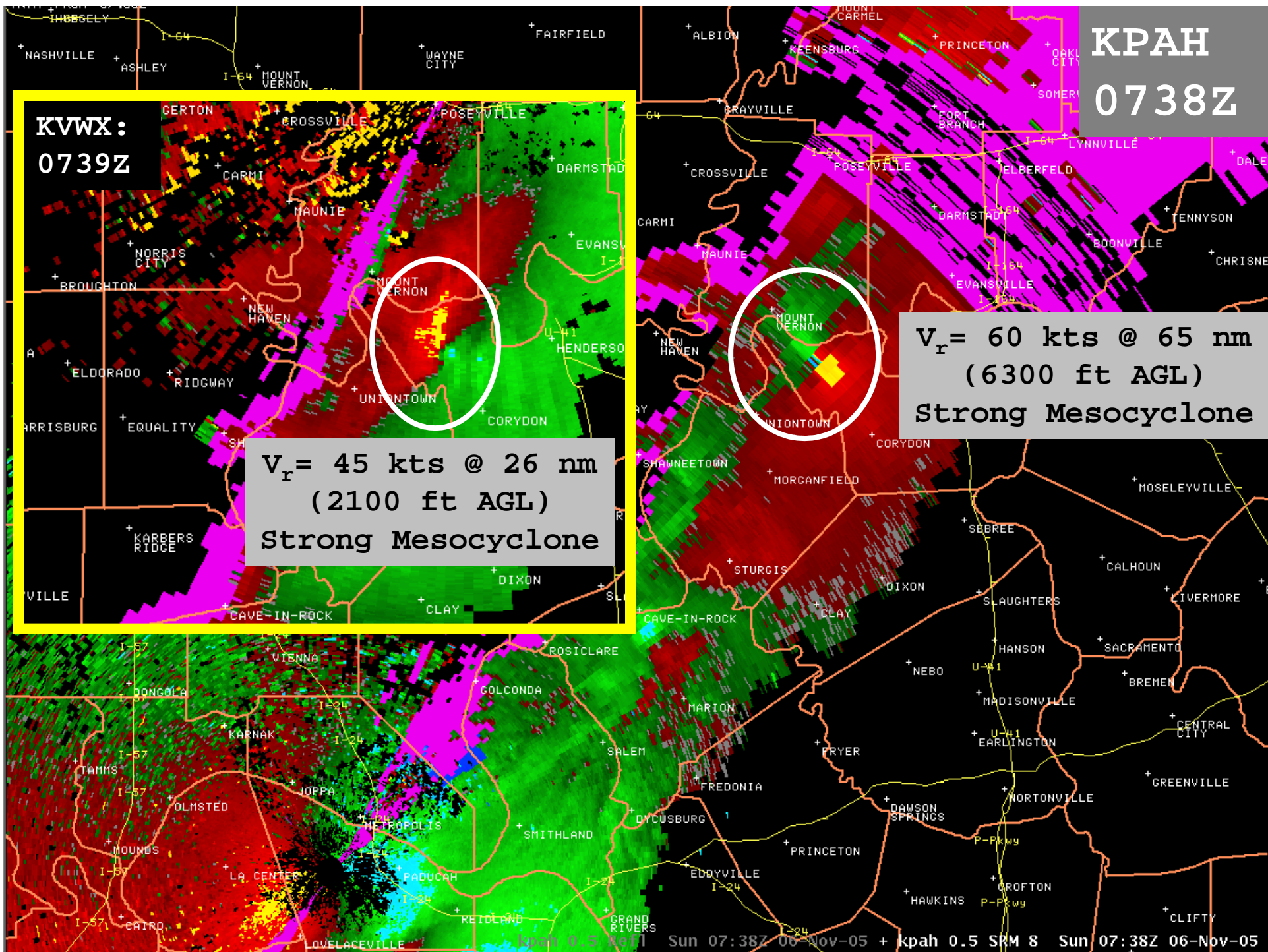


KVWX:
0733Z

$V_r = 40 \text{ kts @ } 28 \text{ nm}$
(2300 ft AGL)

KPAH
0733Z

$V_r = 42 \text{ kts @ } 62 \text{ nm}$
(5800 ft AGL)
Strong Mesocyclone

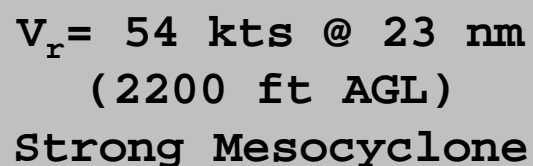


0743Z

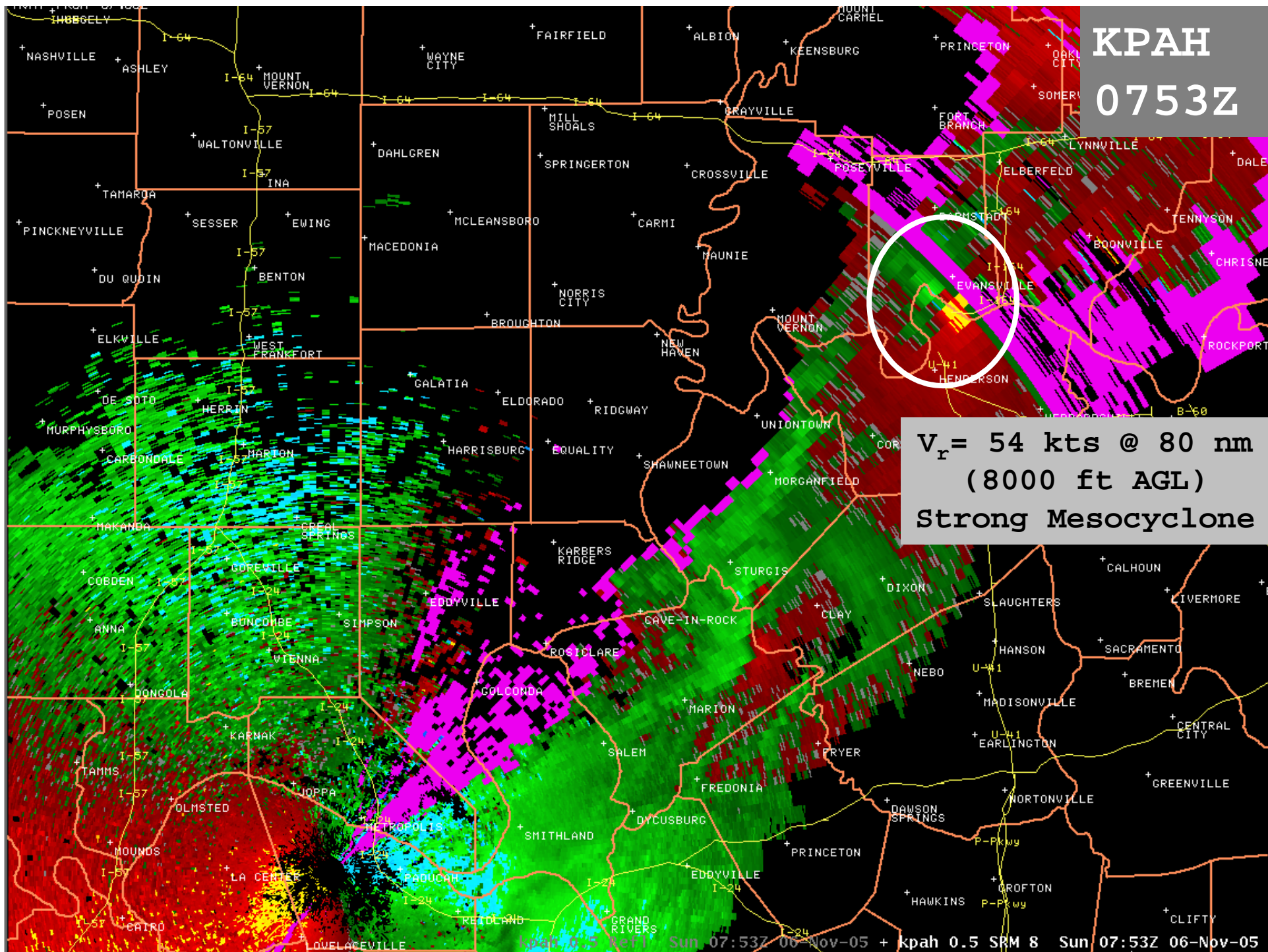
**V_r = 54 kts @ 25 nm
(2000 ft AGL)
Strong Mesocyclone**

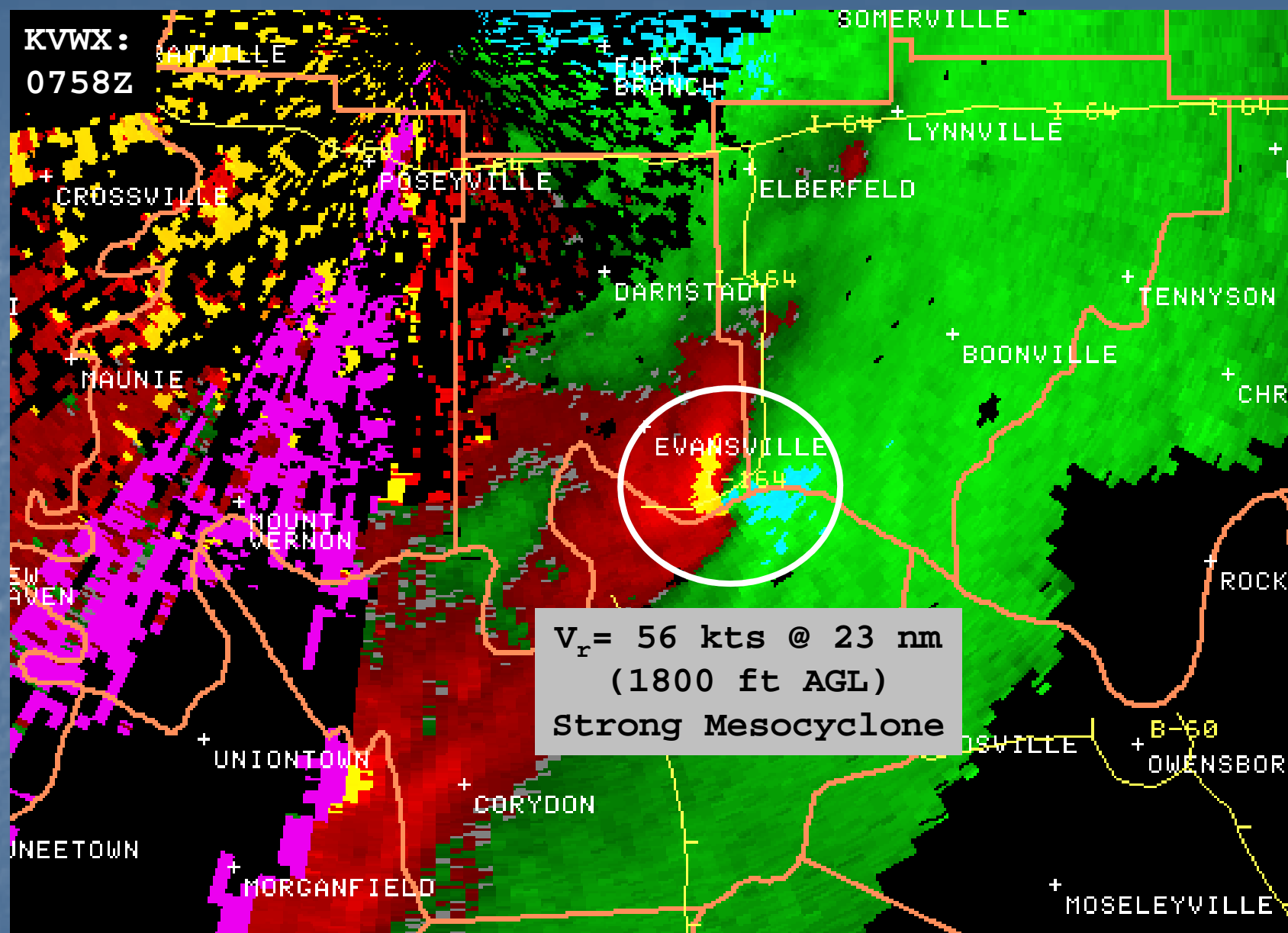
V_r = 50 kts @ 70 nm
(6900 ft AGL)
Strong Mesocyclone

KVWX:
0751Z



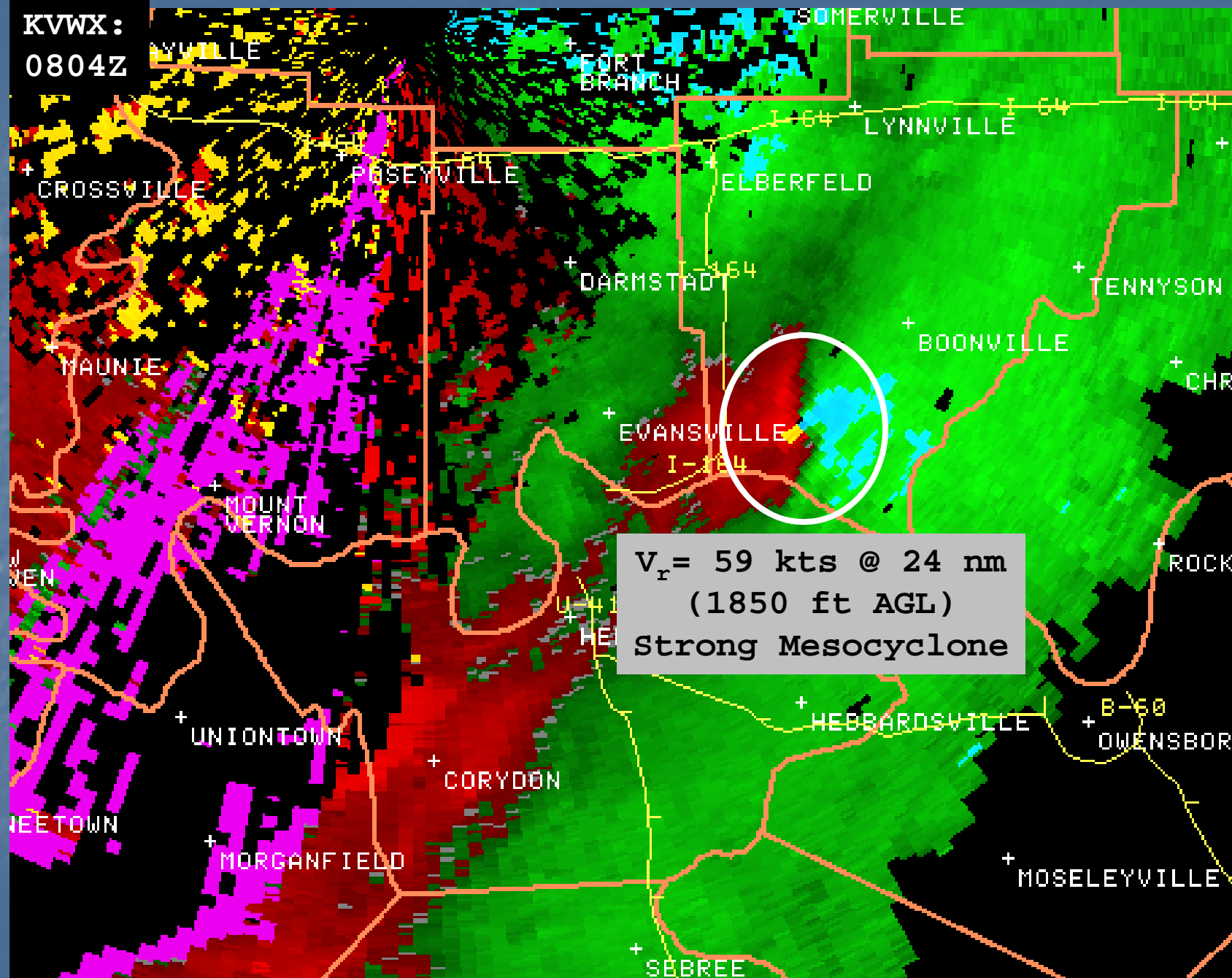
**V_r = 72 kts @ 74 nm
(7800 ft AGL)
Strong Mesocyclone**



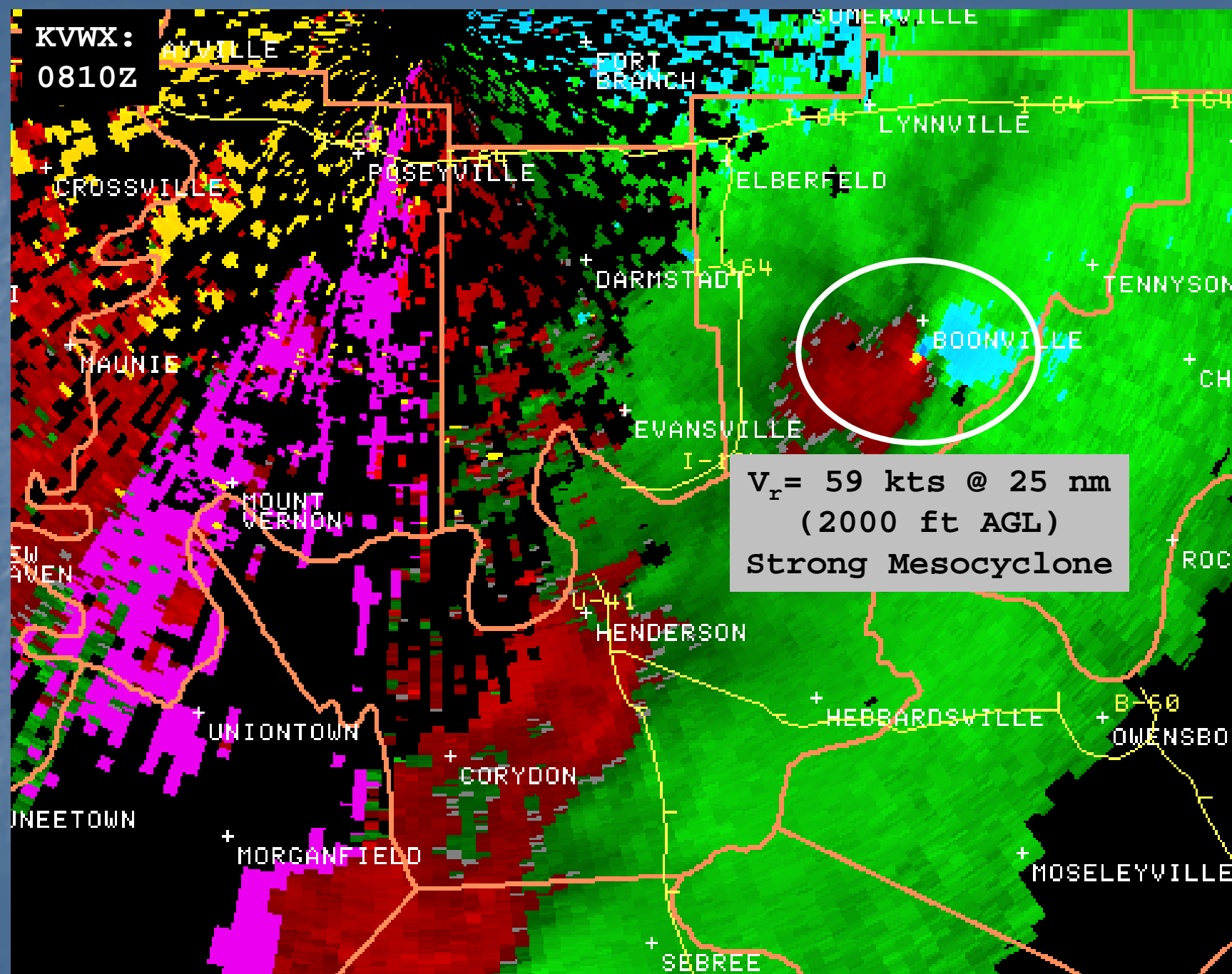


At around this point, the tornado is moving through the Eastbrook Mobile Home Park, where 20 people lost their lives.

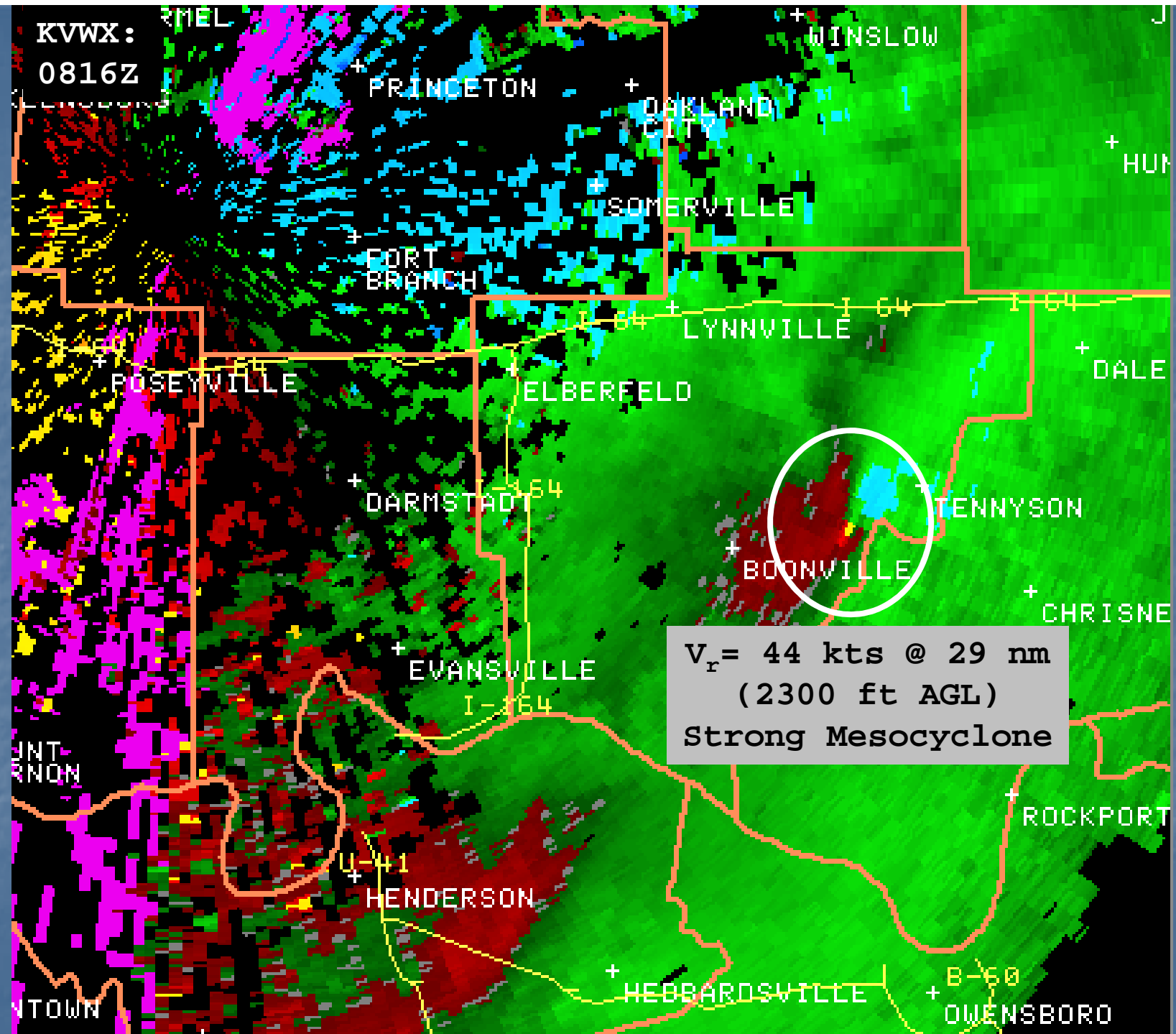
KVWX:
0804Z



$V_r = 59$ kts @ 24 nm
(1850 ft AGL)
Strong Mesocyclone



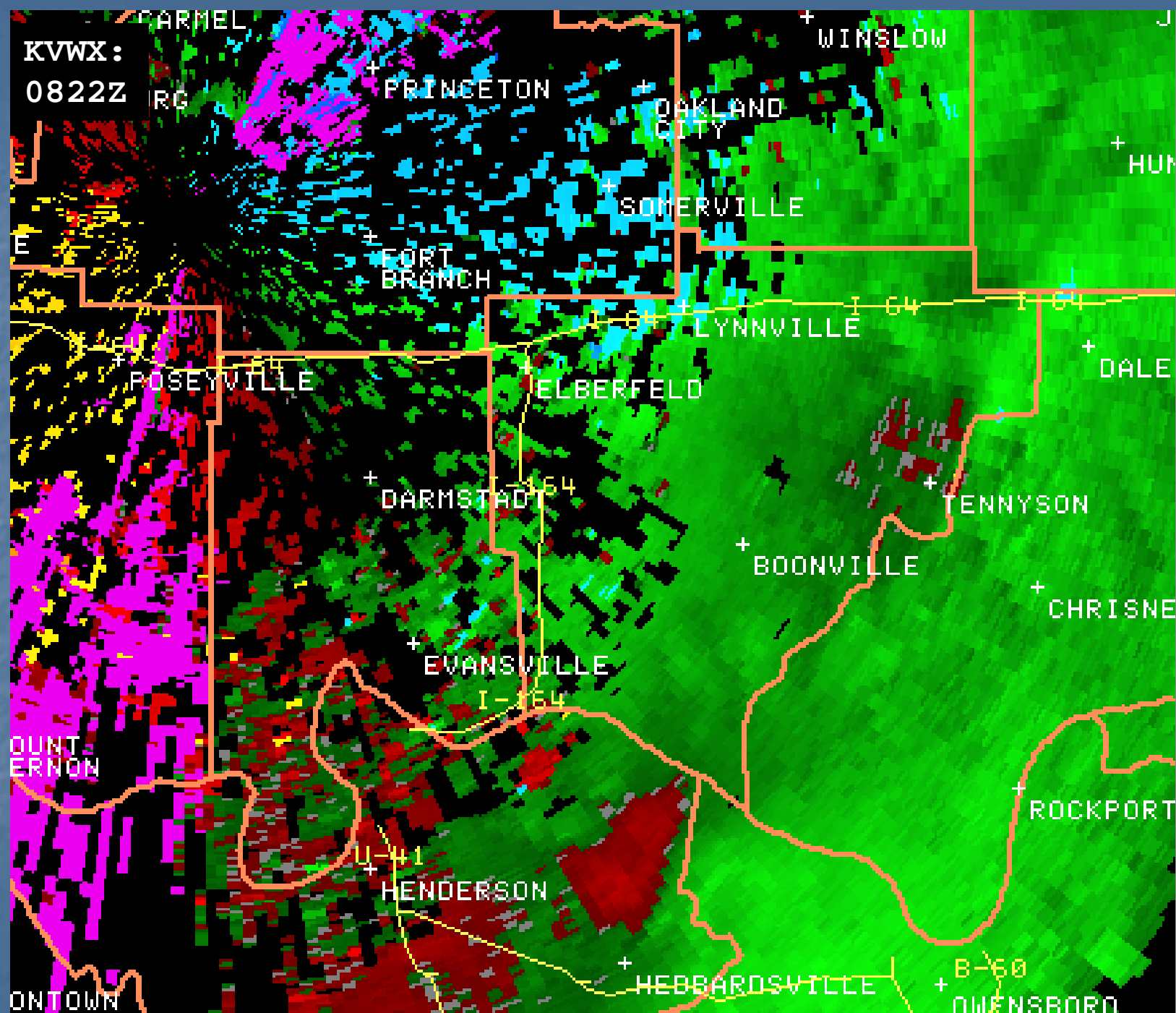
KVWX: RMEL
0816Z

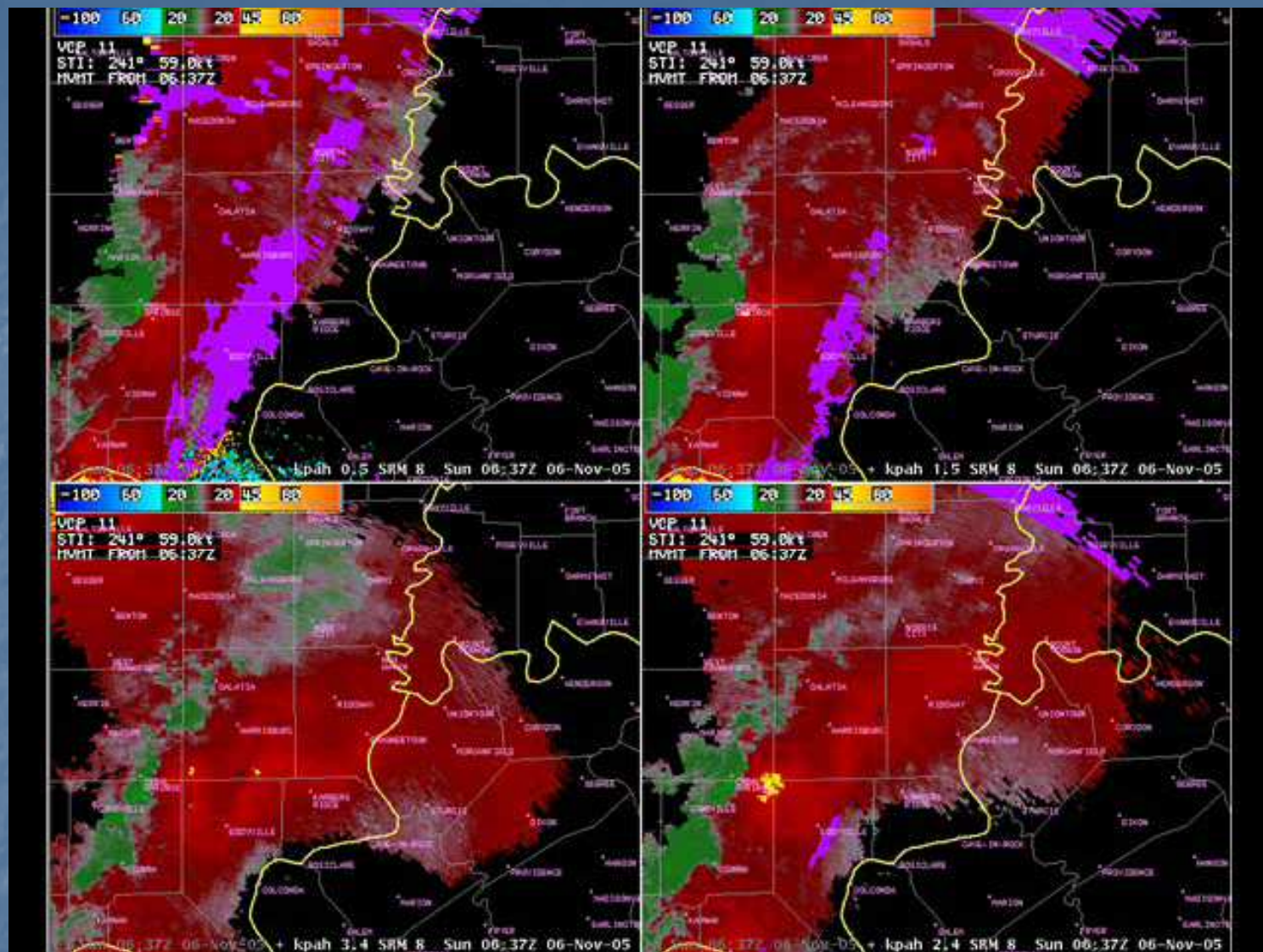


KVWX:

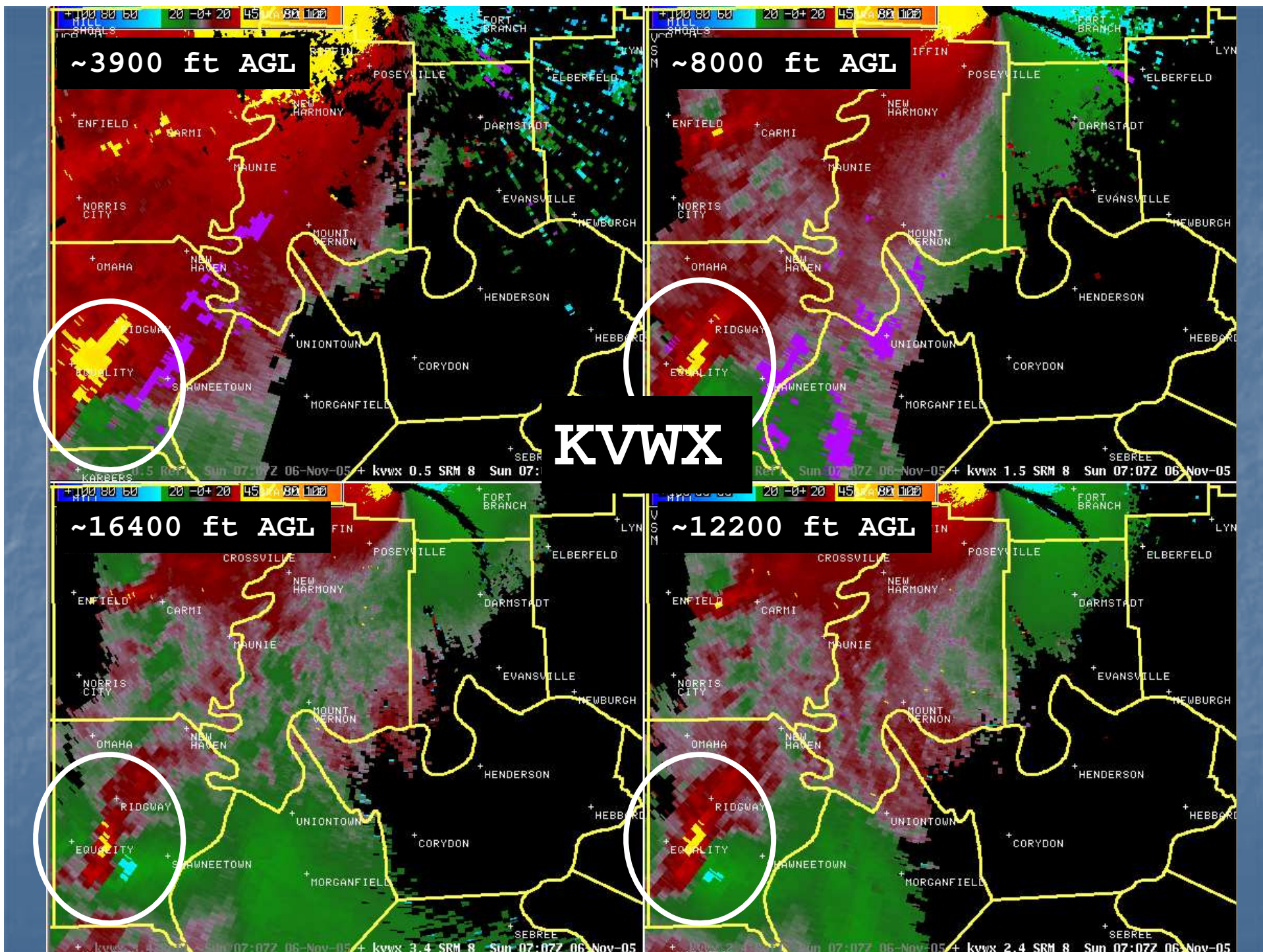
0822Z

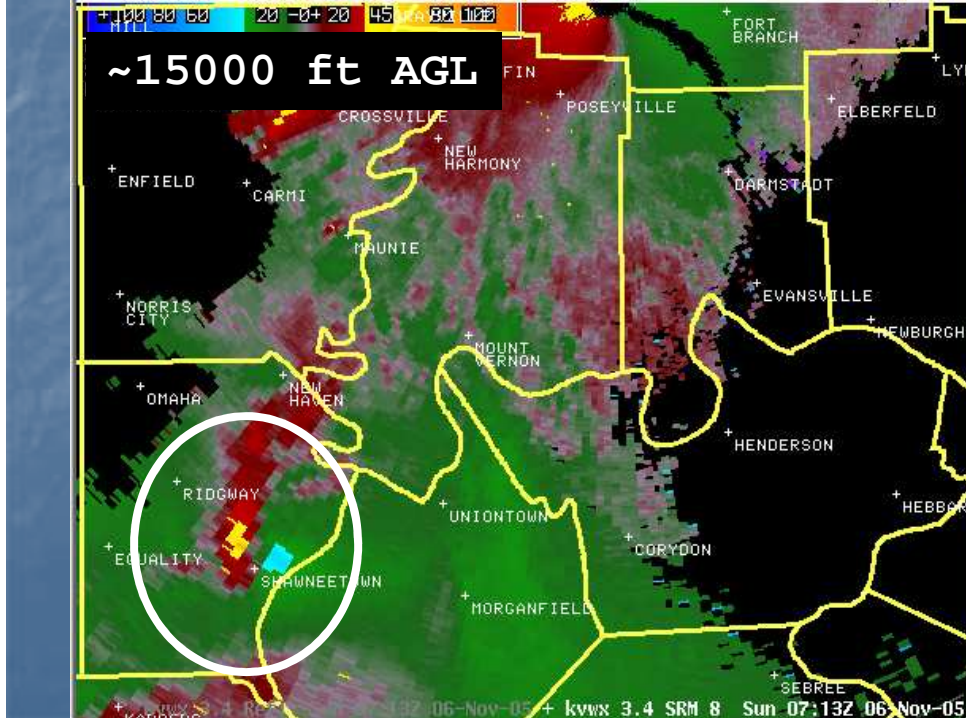
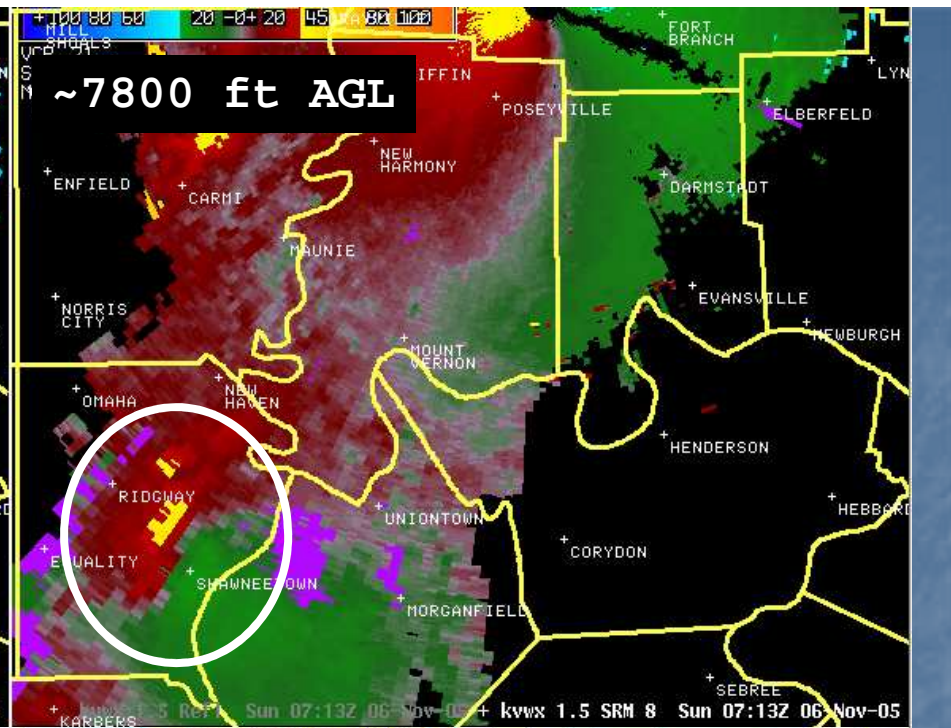
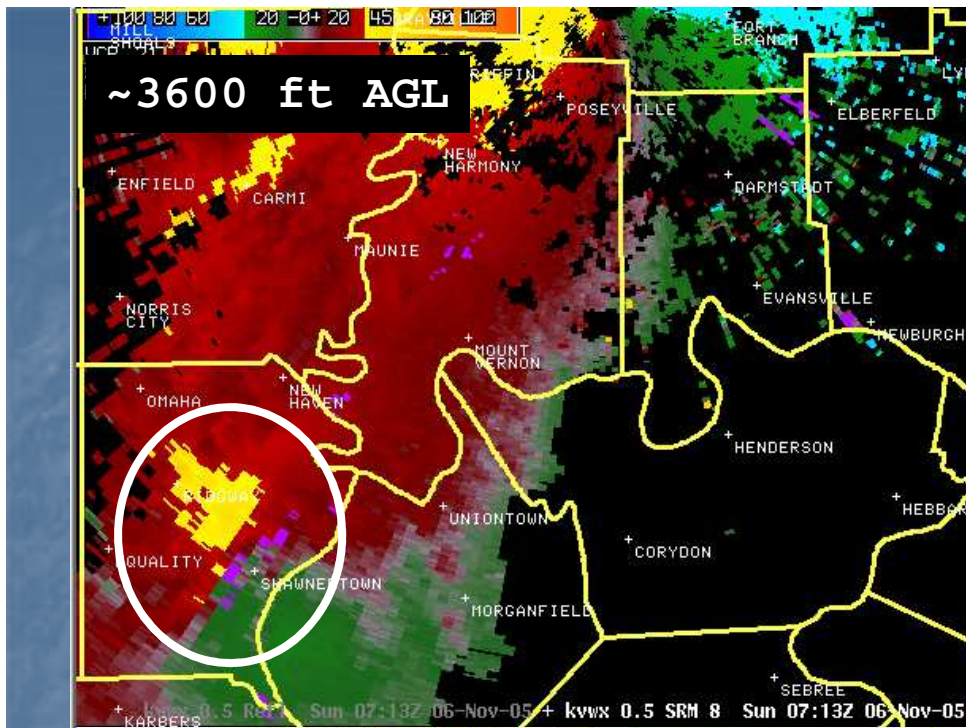
RG

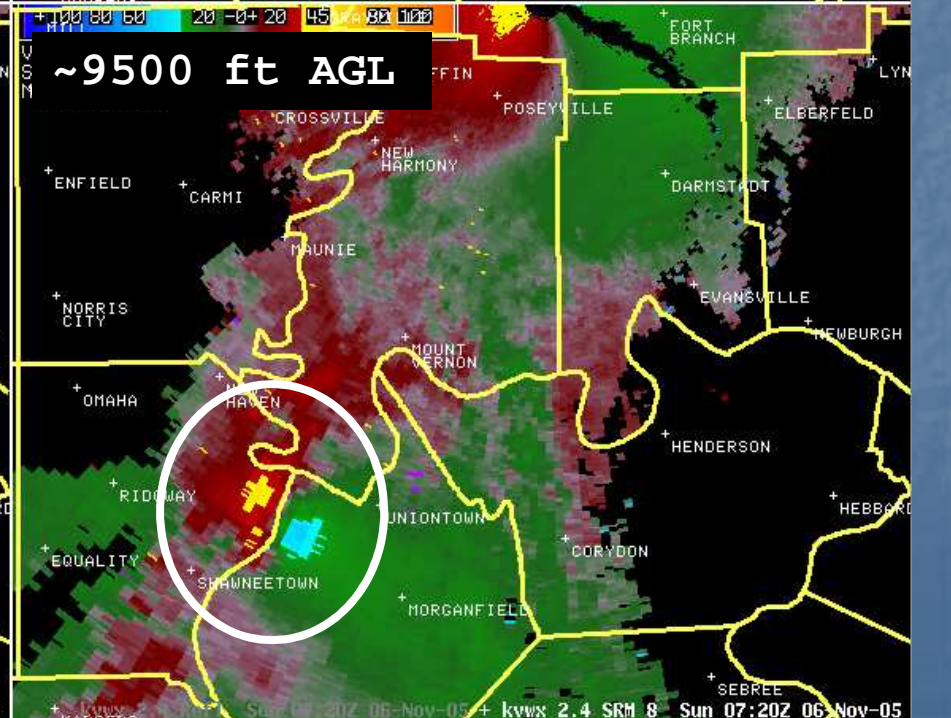
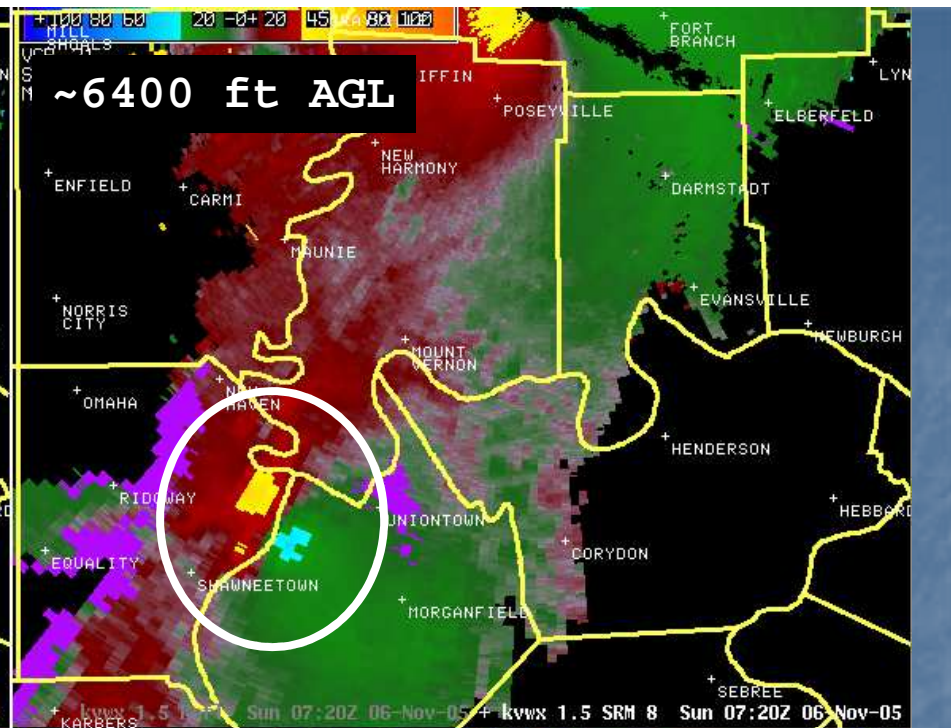
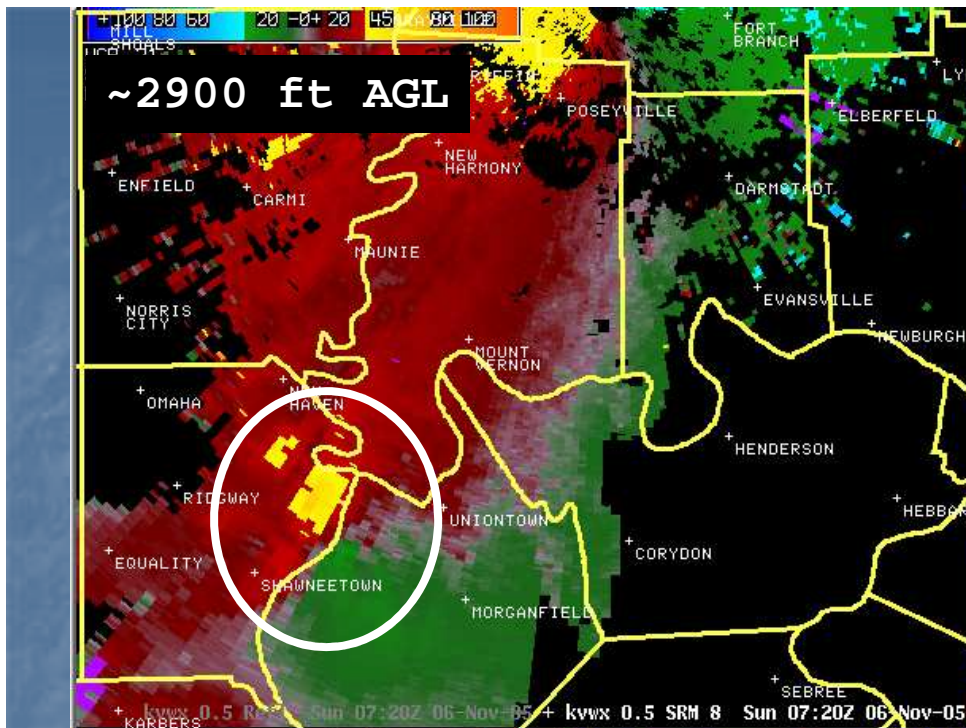


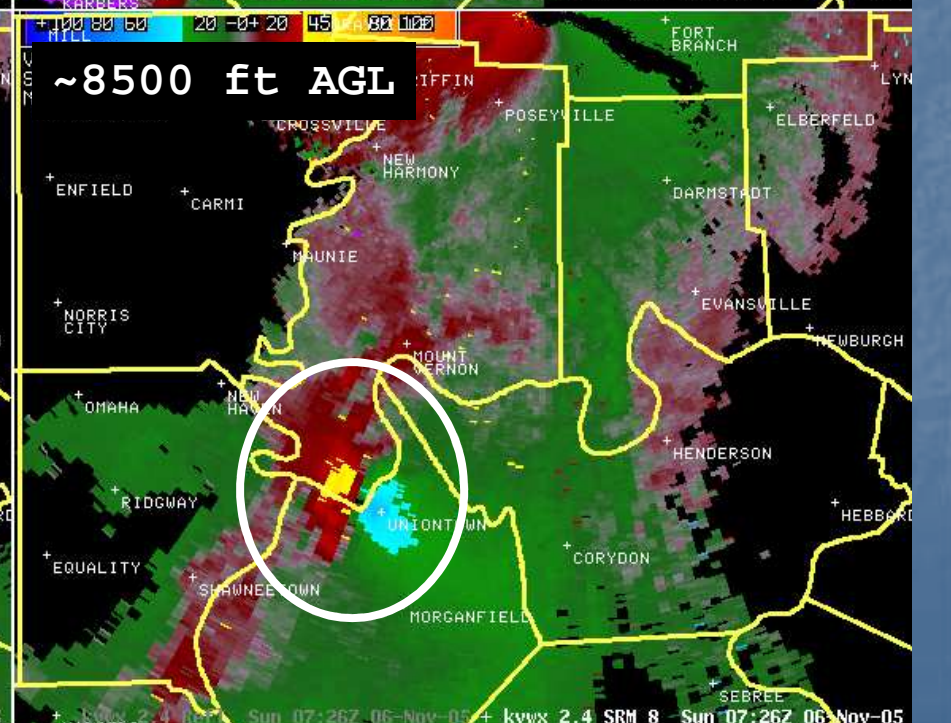
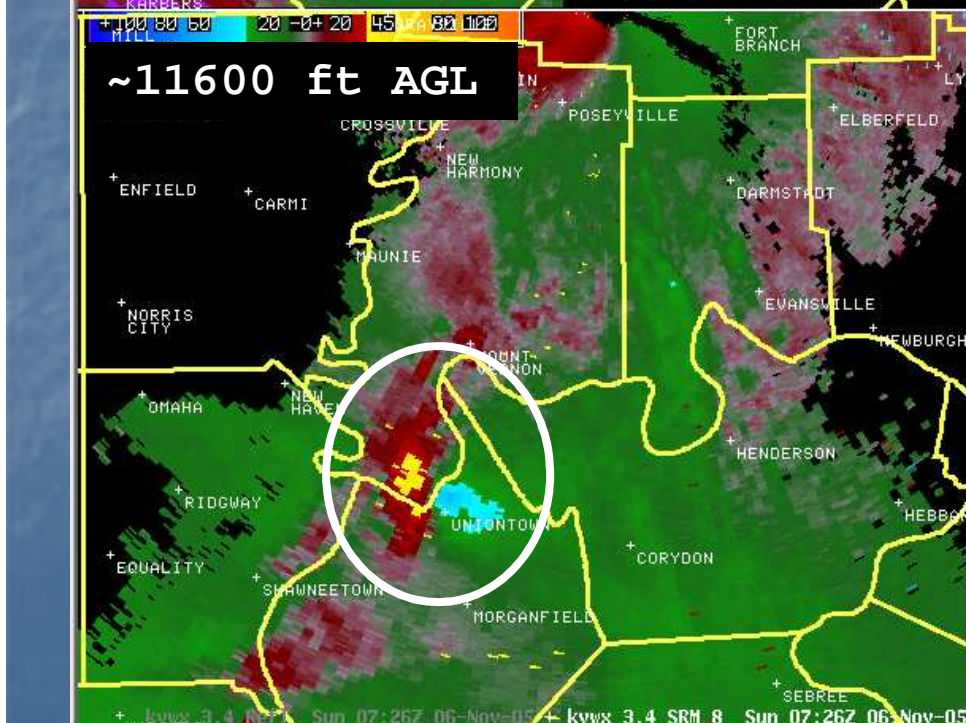
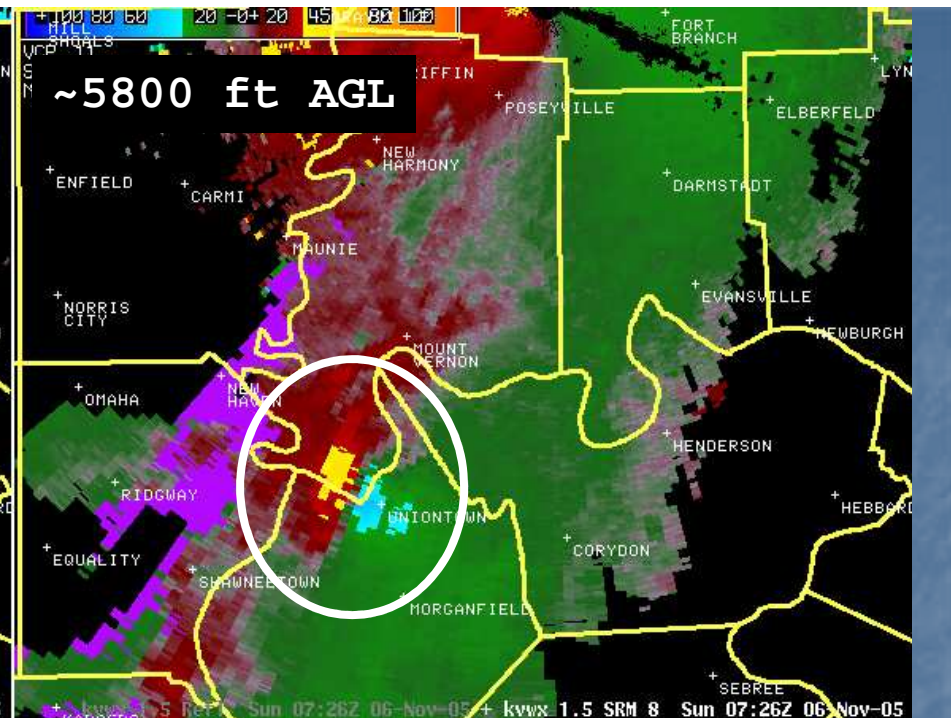
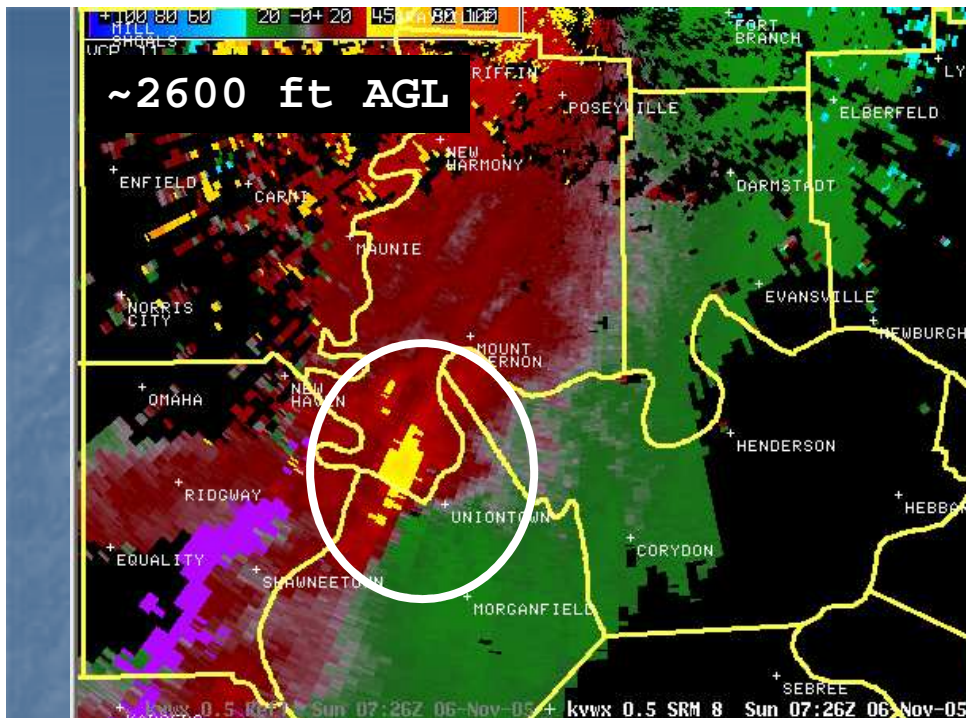


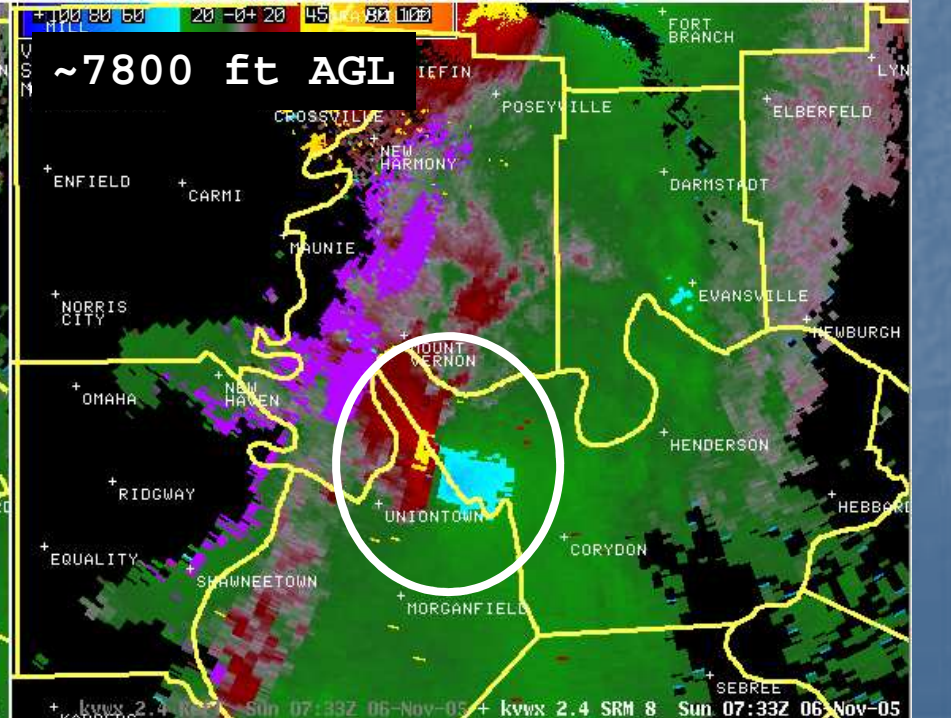
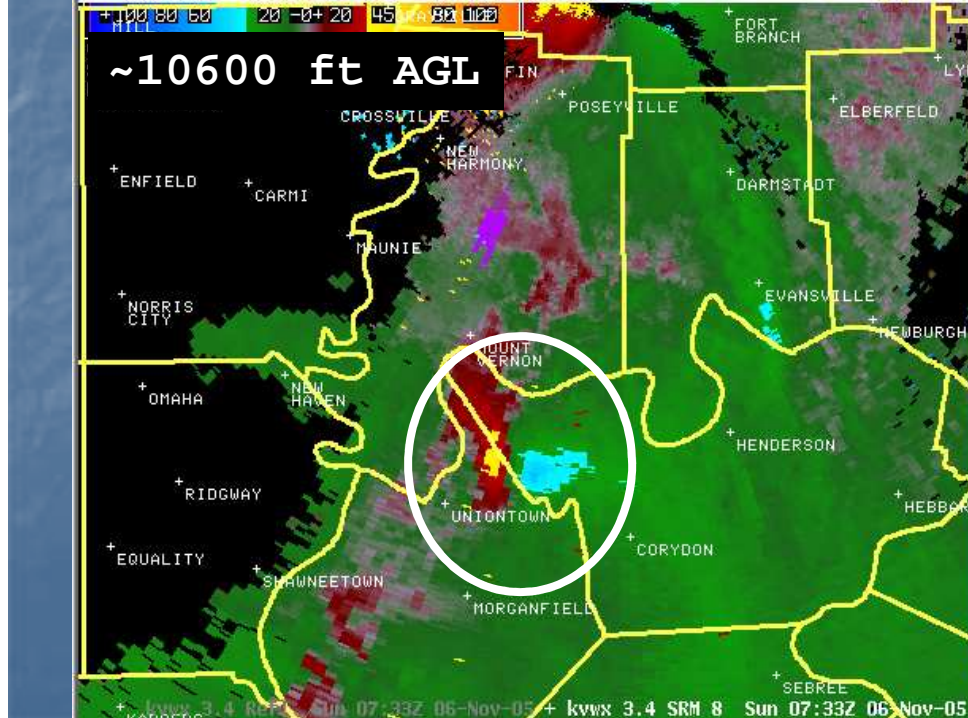
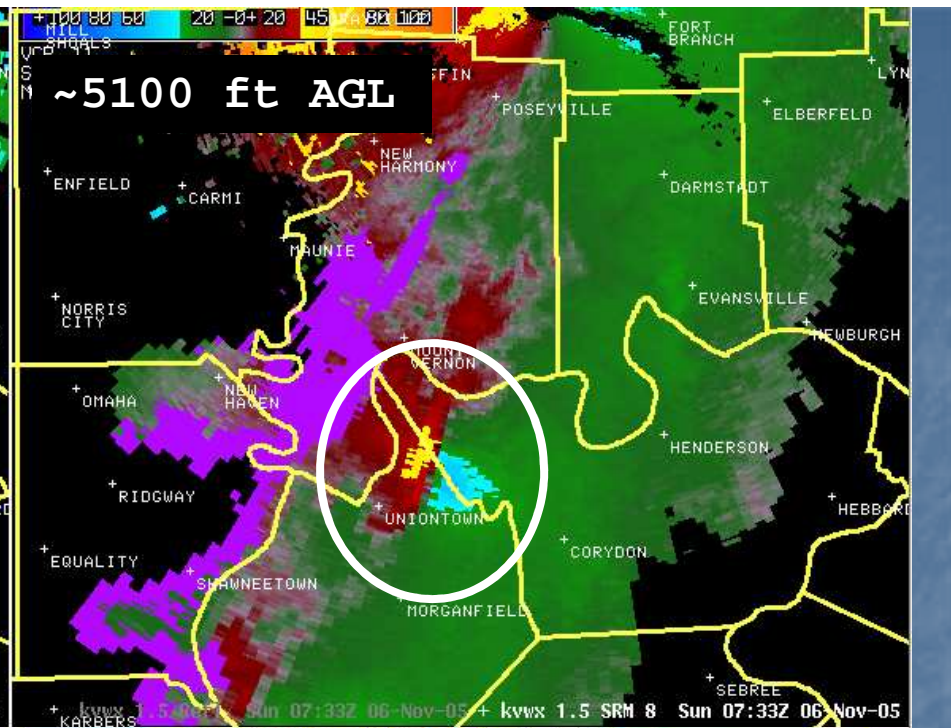
KPAH 4 panel SRM loop

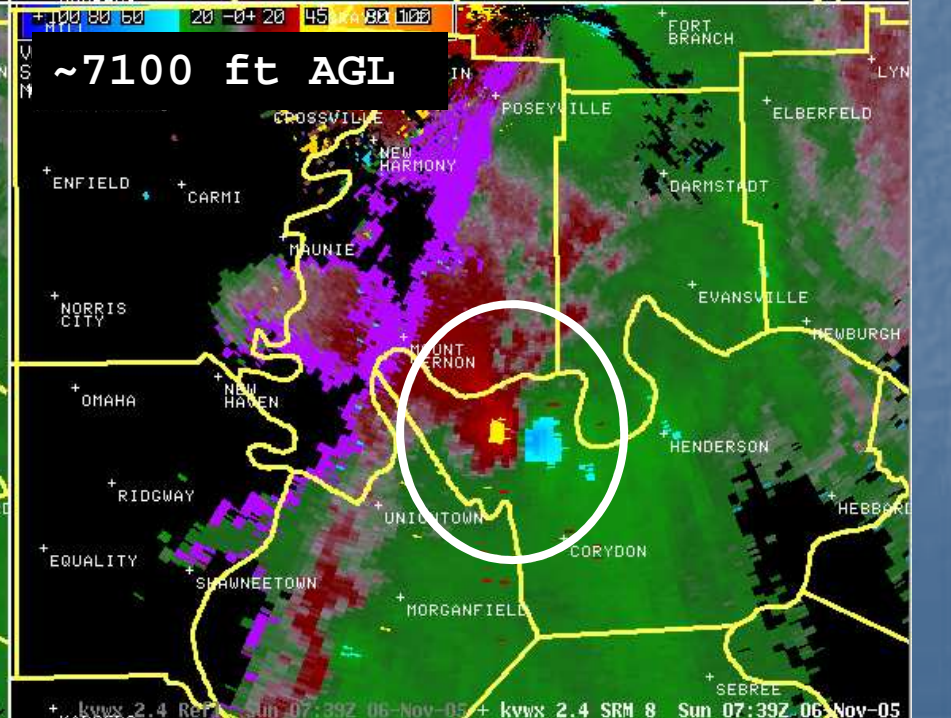
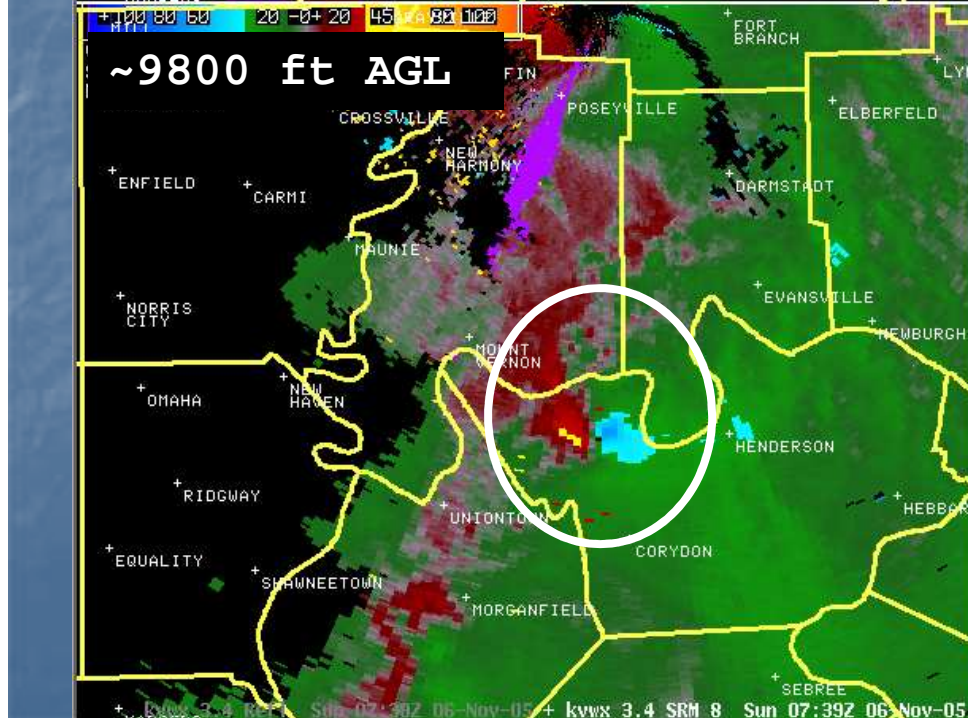
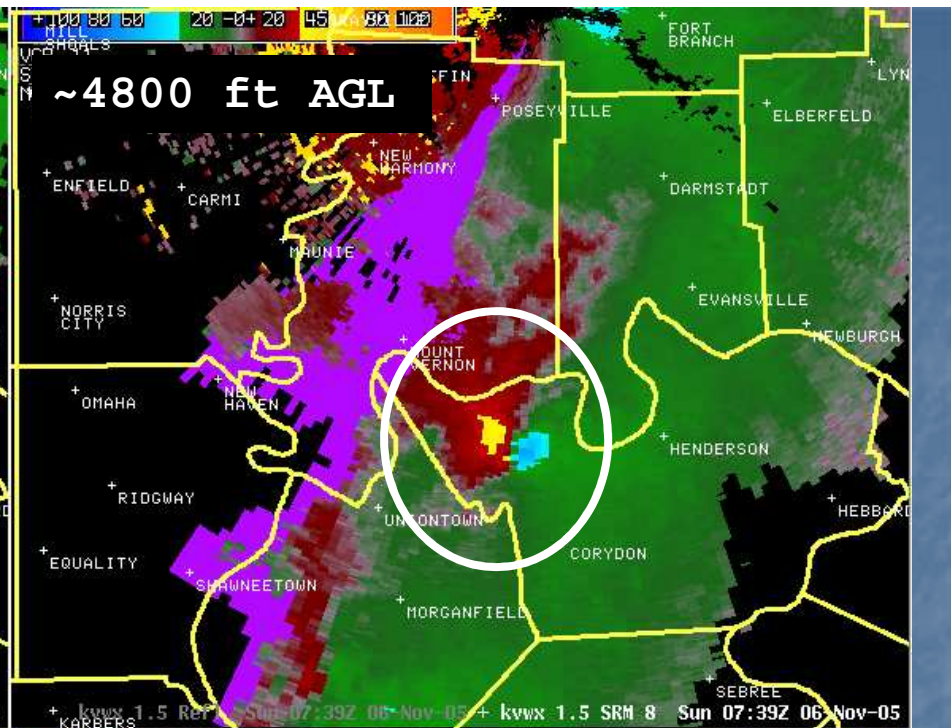
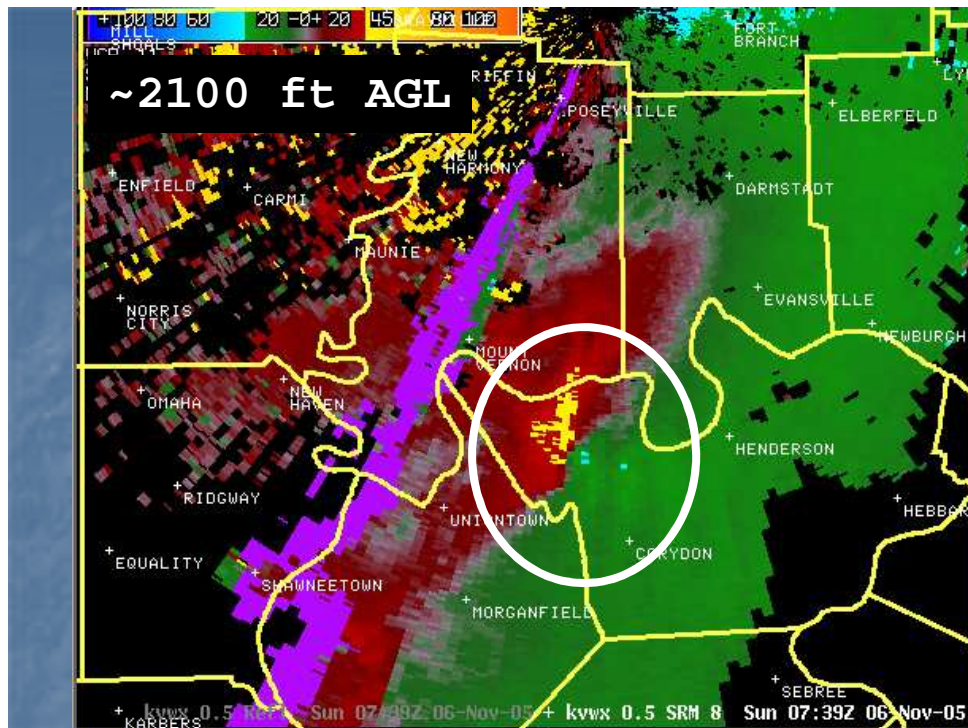


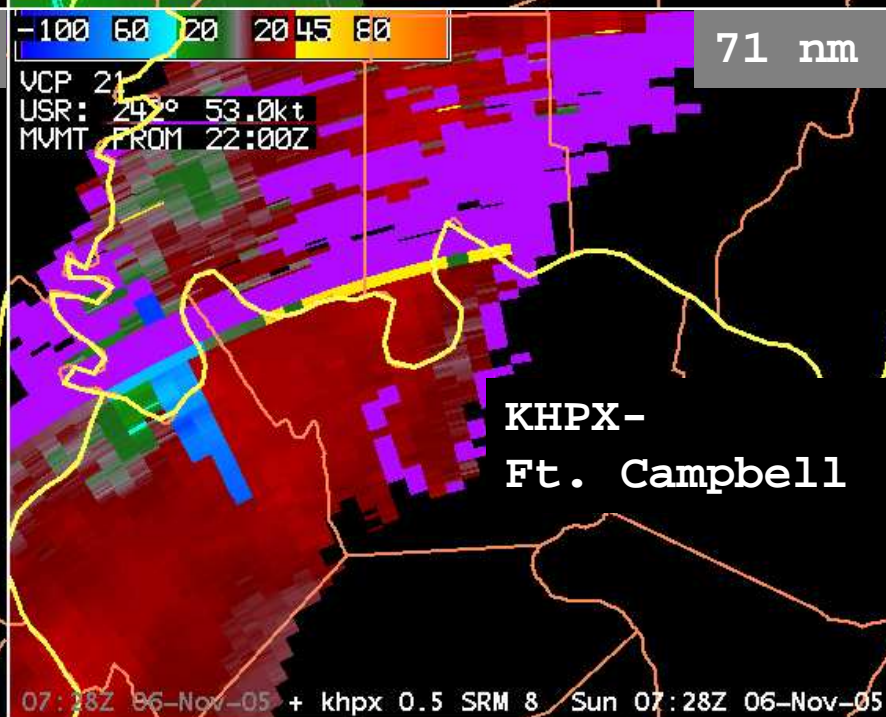
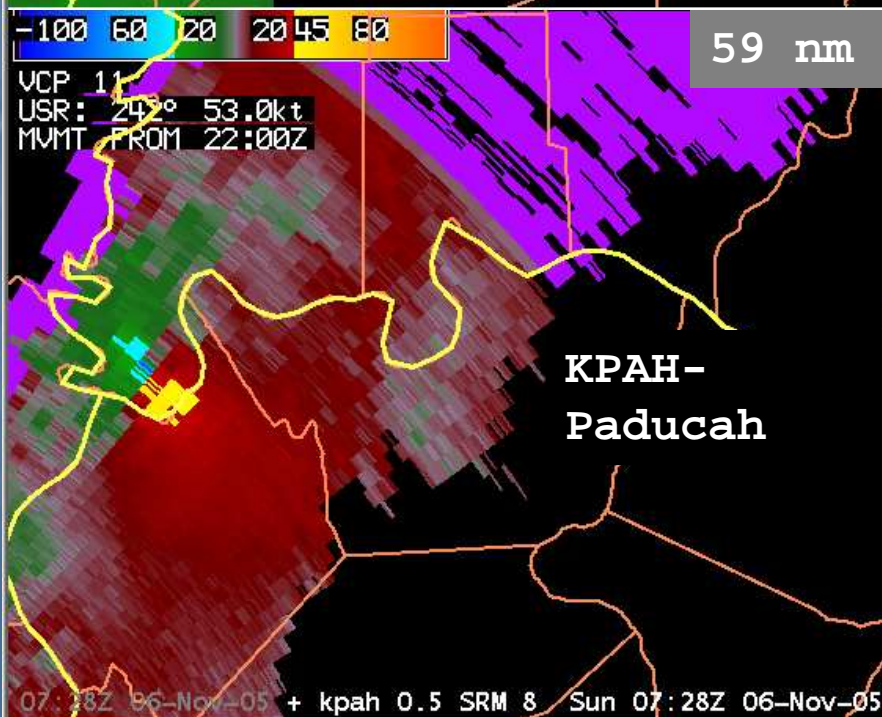
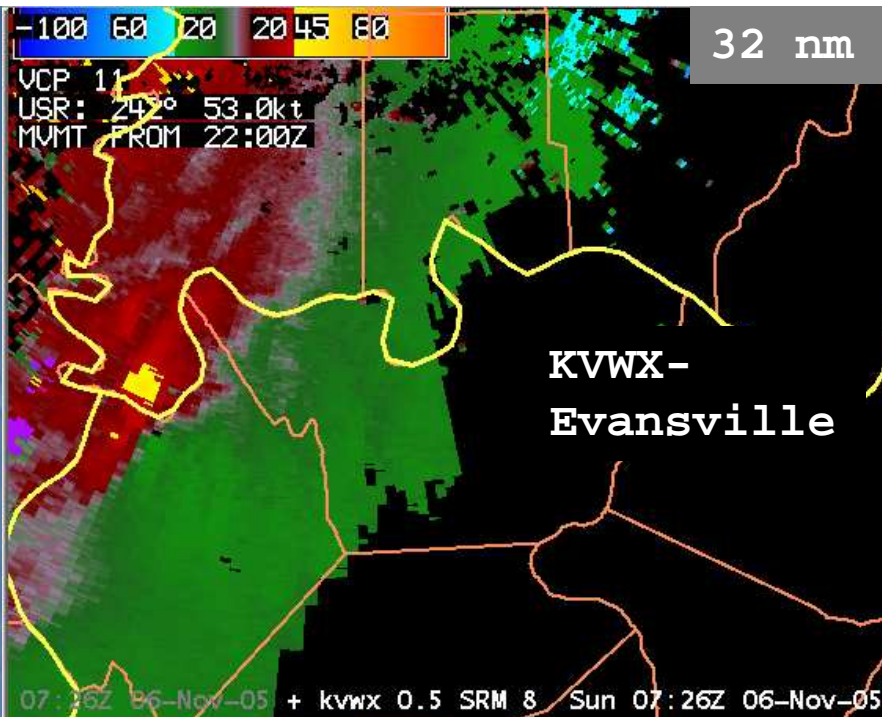












-100 60 20 20 45 80

28 nm

VCP 11
USR: 24° 53.0kt
MVMT FROM 22:00Z

07:33Z 06-Nov-05 + kvwx 0.5 SRM 8 Sun 07:33Z 06-Nov-05

-100 60 20 20 45 80

91 nm

VCP 21
USR: 24° 53.0kt
MVMT FROM 22:00Z

07:35Z 06-Nov-05 + klvx 0.5 SRM 8 Sun 07:35Z 06-Nov-05

-100 60 20 20 45 80

62 nm

VCP 11
USR: 24° 53.0kt
MVMT FROM 22:00Z

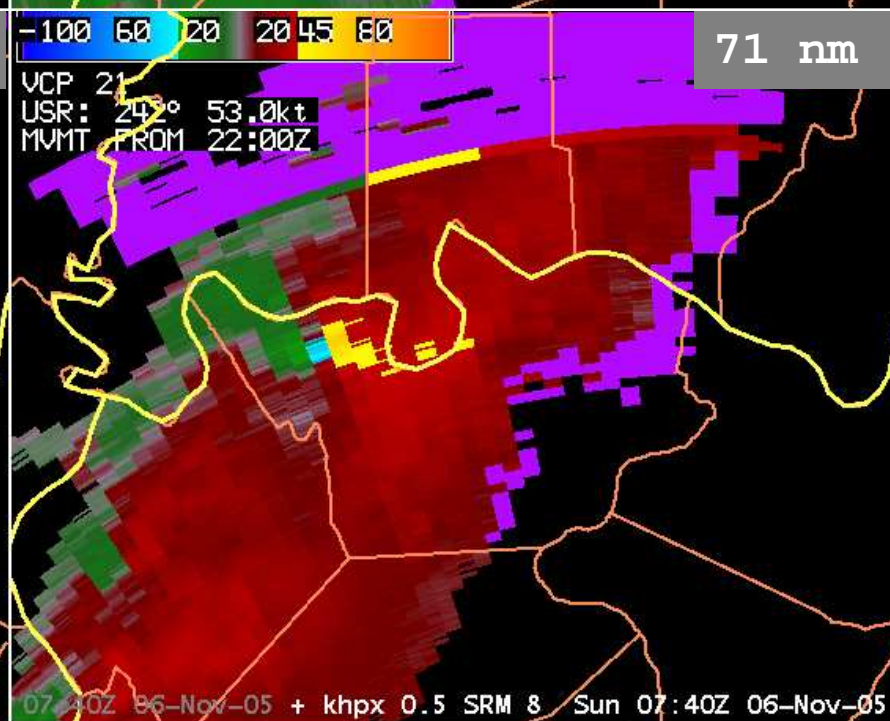
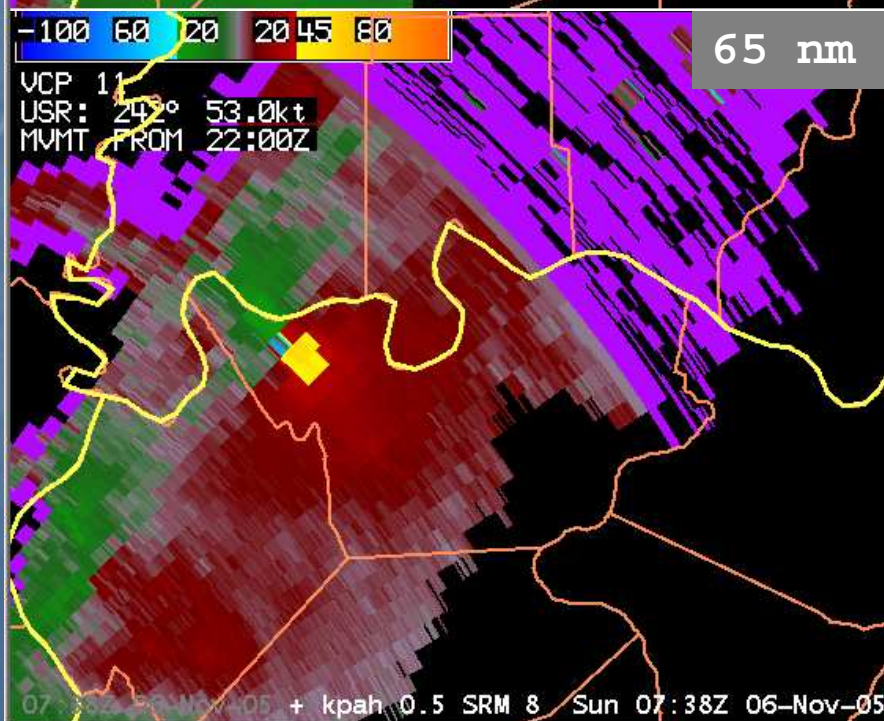
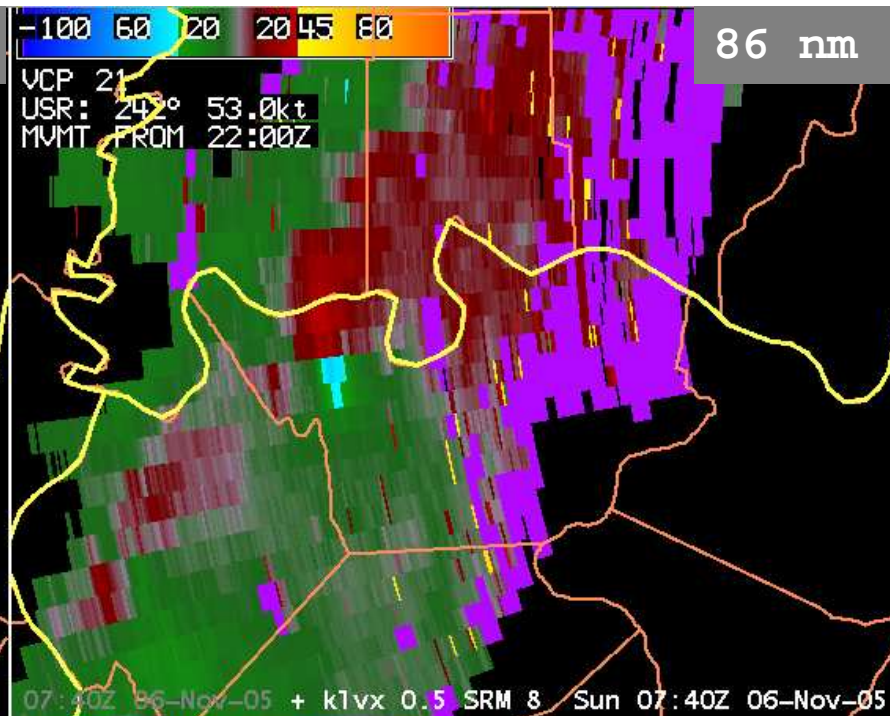
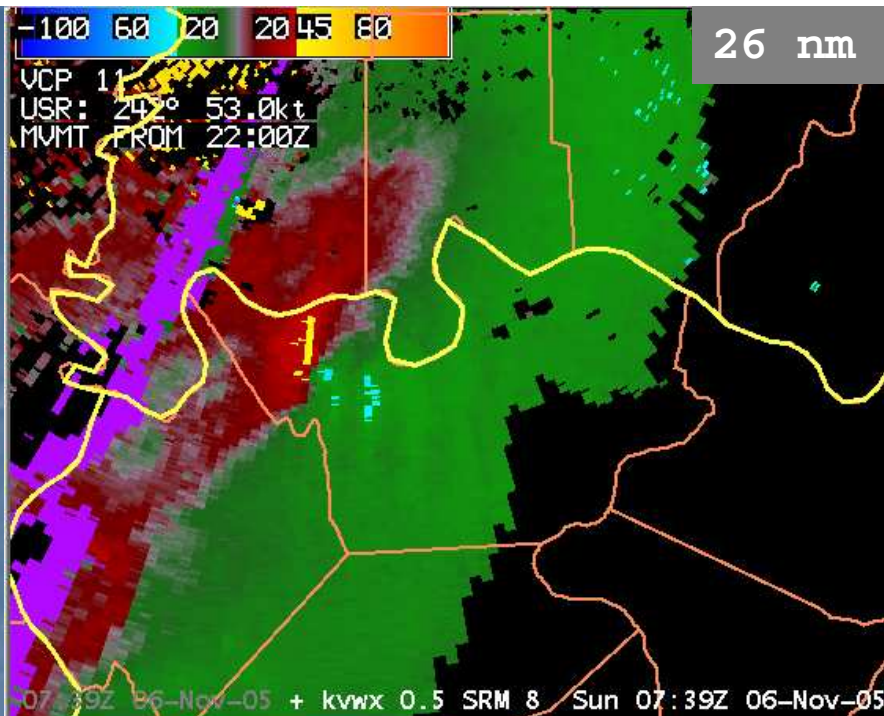
07:33Z 06-Nov-05 + kpah 0.5 SRM 8 Sun 07:33Z 06-Nov-05

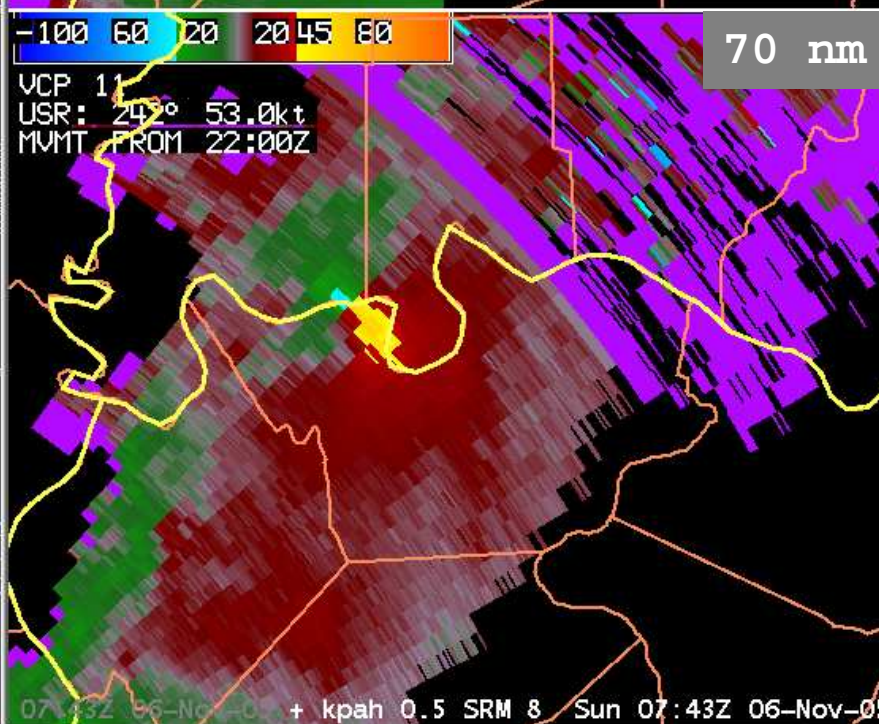
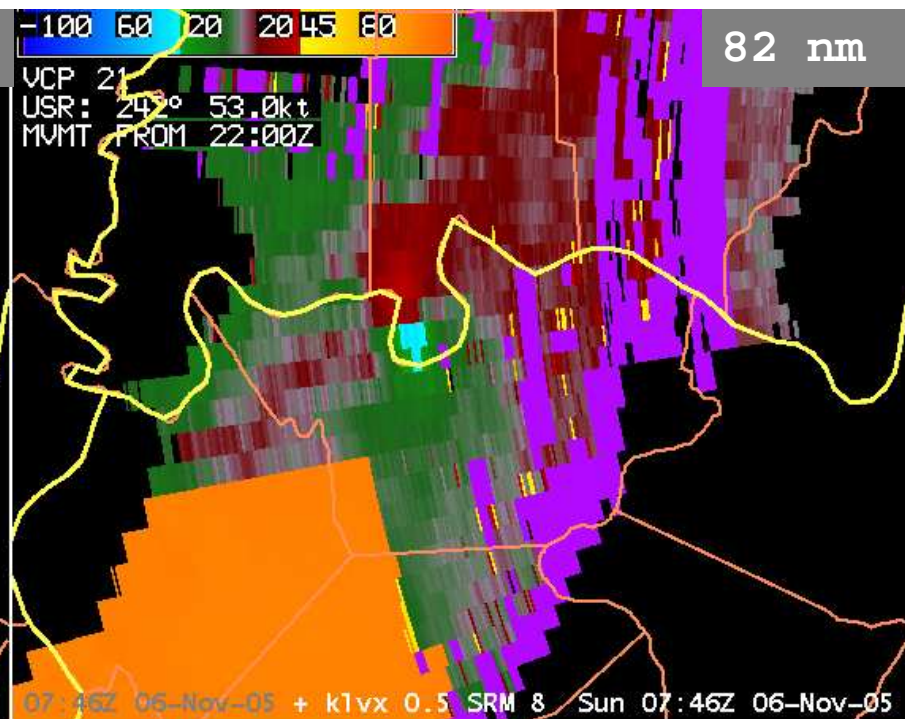
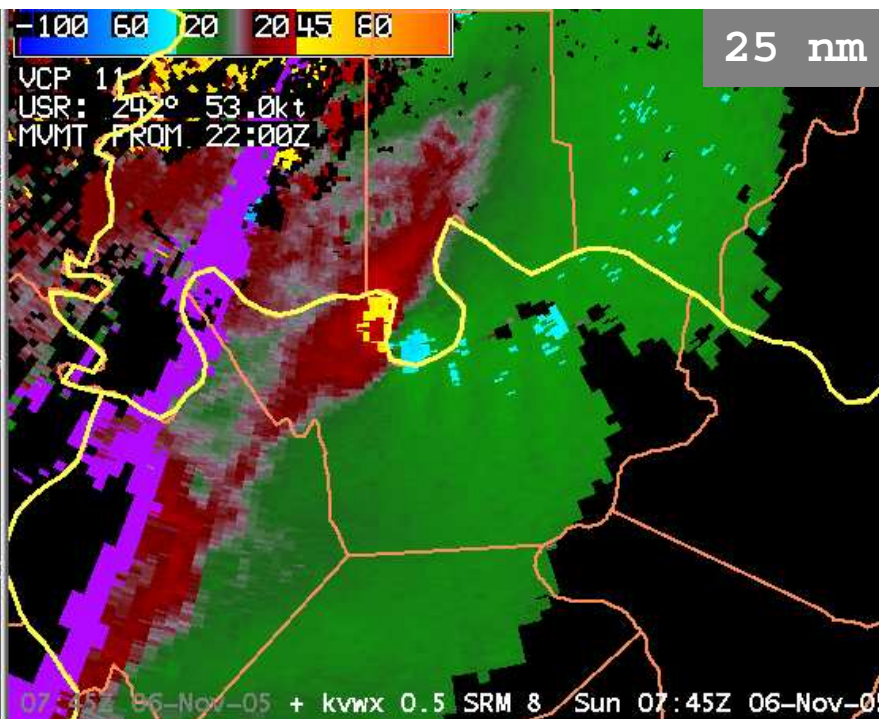
-100 60 20 20 45 80

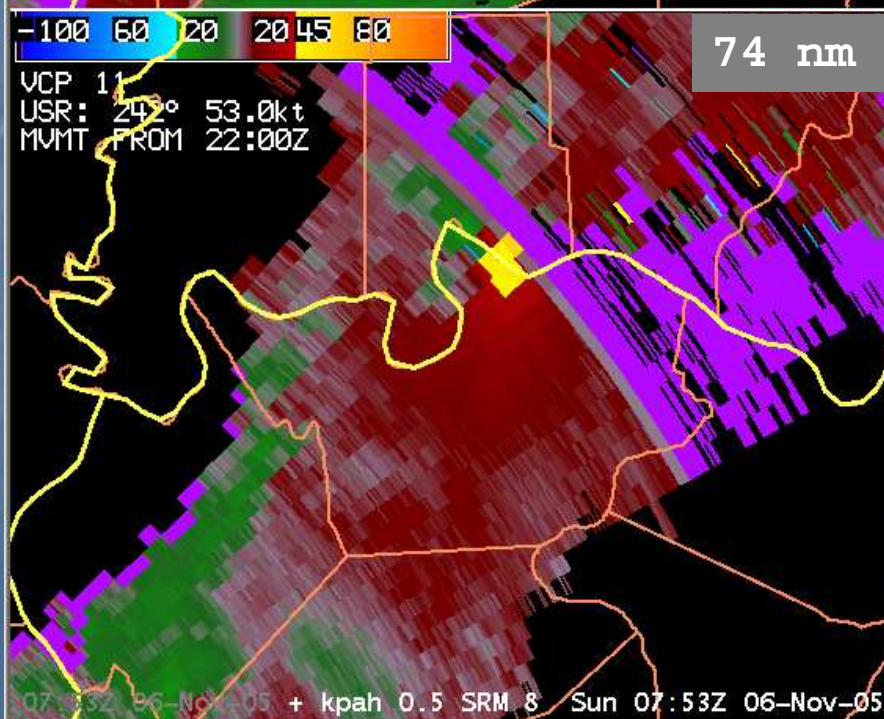
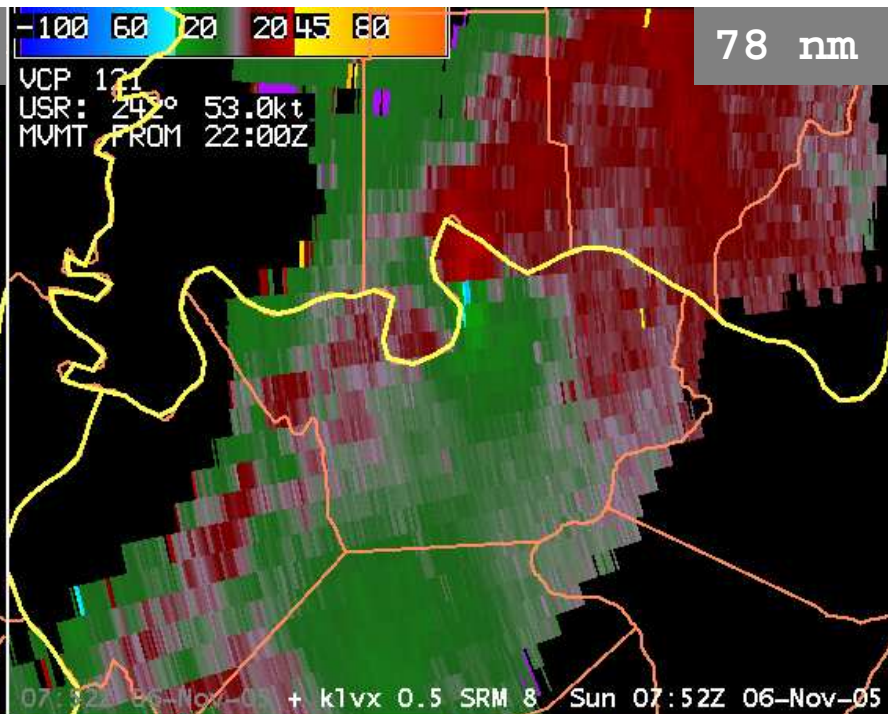
70 nm

VCP 21
USR: 24° 53.0kt
MVMT FROM 22:00Z

07:34Z 06-Nov-05 + khpx 0.5 SRM 8 Sun 07:34Z 06-Nov-05







Some Lessons Learned

- The ability to be open to what could happen, versus what you think will happen - could determine your success or failure.
 - Preliminary thoughts were geared mainly toward damaging winds with a squall line.
 - In reality, clusters of supercells spawned tornadoes.
- Many parameters pointed towards western Kentucky as the main area of concern.
 - Someday, we may find or determine the right combination of parameters to help us have a more accurate view of what is to come.
 - Increased research, faster computers and improved visualization software may aid in this area.
 - You have make the best decision based upon your knowledge at the time – similar to airplane pilots, doctors, military personnel.
- In summary, while there were signs of an improving environment for tornadic supercells, no available guidance was able to create *as* favorable a tornadic environment as was observed.

The End

**For more information/pictures:
weather.gov/pah**



Pickup truck tossed nearly 50 yards – near Smith Mills, KY